

## Inside Dope

By GEORGE  
F. TAUBENECK



Learn to live and laugh —  
thus delay your epitaph

Stories of the Week  
Any Questions?  
Contribution of the Week  
Truckers, Attention!  
Verse of the Week  
Wisdom of the Year  
Quotes of the Week

### Stories of the Week

"I just love goldfish," gushed a gal. "My bathtub is full of them."

"What do you do when you take a bath?"

"Oh," she blushed, "I blind-fold them."

Quaker farmer's balky mule was balkier and mulier than ever before.

"Thee knows that my religion forbids me to curse or beat thee," scolded the Quaker. "But remember, I can sell thee to a Presbyterian."

"My wife has suggested that I take up a new sport," a man was saying at a luncheon table. "Downright decent of her, I thought."

"By the way, how does one play Russian roulette?"

### Any Questions?

In Oklahoma the fishermen demand air conditioning.

The state's Planning and Resources Board reveals that anglers have refused to stay in Oklahoma's new 20-room fishing lodge at Lake Texoma—because it is not air conditioned.

A nearby commercial fishing encampment—completely air conditioned—is booked solid.

### Contribution of the Week

John Chambers & Son, Ltd.  
Engineers & Importers  
Auckland C.I., N. Z.

### Inside Dope:

A children's "Pet Parade" was recently sponsored by Radio Station 12B Auckland, New Zealand, and amongst the entrants one small boy brought along his pet bantam rooster.

After the announcer had made the usual overtures she asked him: "How long have you had your pet rooster?"

There was a slight pause and a small voice said: "Since he was an egg."

S. W. KIDD

### Truckers, Attention!

A new automotive seat belt, known as "Saf-Drive" and designed to meet the rigid requirements of industrial fleet owners, has been introduced by the An-  
(Concluded on Page 8, Col. 1)

## Detroit Refrigeration Men May Get Heating License Waiver Under Plan

By George M. Hanning

DETROIT—Despite prolonged opposition by the Detroit chapter of the Refrigeration and Air Conditioning Contractors Association, a study committee of interested parties recently put its stamp of approval on a series of changes in the Detroit refrigeration and gas and oil burner ordinances.

The changes are intended primarily to enable a holder of a Class B or C refrigeration contractor license to qualify for examination for a gas and/or oil contractor license by waiving the experience requirements. A heating contractor would likewise qualify to take an examination for a refrigeration license.

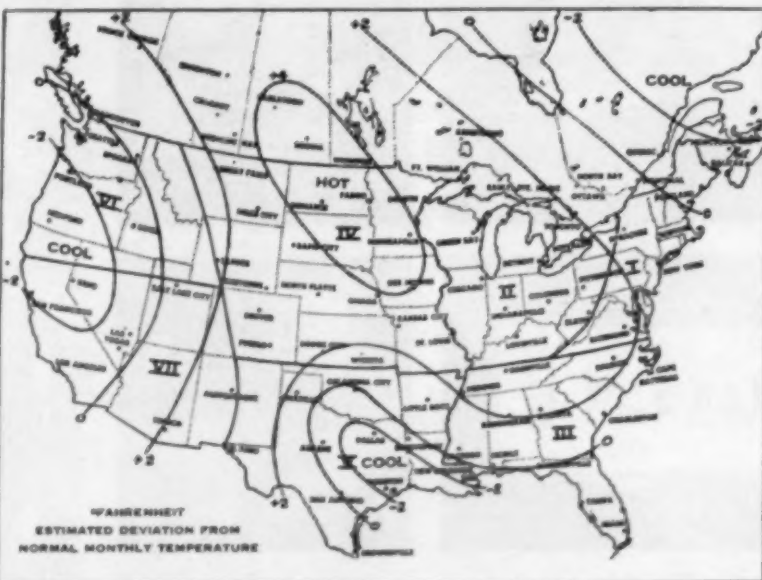
The charges would also set up a new "restricted" license in both ordinances permitting a contractor who did not feel qualified for a full license to install, but not service, packaged equipment only.

This would be limited to packaged air conditioning units of up to 7½ hp., gas-fired design heating units limited to input ratings of up to 300,000 B.t.u.h., and oil-fired design units in use with Nos. 1, 2, or 3 distillates  
(Concluded on Page 2, Col. 1)

## Normal August Weather Seen For Most of U.S.

NEW YORK CITY—Temperatures in August "will be about normal for the month" except for the Far West, where cool conditions are expected to continue through August, and in the North Central States, where it is predicted that the cool trend that prevailed in the latter part of July will revert to warmer than normal temperatures.

That's the long range forecast for the month of August, as prepared especially for readers of AIR CONDITIONING & REFRIGERATION NEWS by Weather Trends, Inc. here, experienced forecasters who specialize in  
(Concluded on Page 21, Col. 4)



## AF Cooling Meeting Set for Aug. 13-16

MONTGOMERY, Ala.—Many phases of operation and maintenance of air conditioning and refrigeration equipment will be discussed at a four-day conference for U. S. Air Force personnel to be held at Maxwell Air Force Base here Aug. 13 through 16.

At morning and afternoon sessions representatives of industry and Air Force engineers and officers will review service problems and solutions on various types of systems and components with the emphasis largely on air conditioning.

Special features of the conference include a symposium on filter cleaning and an open forum on operation and maintenance problems. Most of the final day of the conference will be devoted to the forum.

Industry people interested in attending the conference are advised to get in touch with the Refrigeration and Air Condi-  
(Concluded on Page 4, Col. 1)

## NWAHACA Asks for Crusade Against Bad Installations

## Congress Passes Car Dealers Rights Bill

WASHINGTON, D. C.—By a voice vote, the Senate last Wednesday approved and sent to the White House a House-passed bill which would give auto dealers the right to sue manufacturers for failure to carry out franchise contracts in good faith.

The House last Monday passed the controversial measure by a vote of 146 to 45. Main announced aim of the legislation is to protect dealers from coercion or intimidation by manufacturers.

The measure defines lack of "good faith" as involving only "coercion and intimidation or threats of coercion or intimidation." The bill says that "recommendation, endorsement, exposition, persuasion, urging, or argument" shall not be considered  
(Concluded on Page 4, Col. 5)

CLEVELAND — Pulling no punches in pointing out the "black eye" the industry has received because of bad installation practices, the National Warm Air Heating & Air Conditioning Association, in its most recent bulletin, urges its members to crusade against bad practices in the warm air heating and in the air conditioning field.

The bulletin contained an editorial on the subject and also cited examples of what has been done in Michigan and Wisconsin to correct such practices.

Under the heading "Milwaukee man hits 'lousy buck' installations . . . gives education to builders," the NWAHACA bulletin said:

"On a recent Sunday afternoon in Milwaukee, home builders and their salesmen were startled to find themselves being asked some very pointed questions about the quality of the heating systems installed in the new homes they were offering for sale.

"These questions were being raised by potential home buyers who, surprisingly enough, had suddenly changed their usual habit of being overwhelmed by the colored bathroom fixtures and fancy gimmicks, and were desirous of knowing, above all, how many heating runs were being used in the heating system.

"Before the day was over several Milwaukee builders were on their phones advising their heating contractors to improve the distribution systems they were installing. These were builders whose only criteria for heat system evaluation, up to this time, had been the sharp pencil."

The bulletin explained that "all this furor" was created by the "voice of a warm air champion, who was fed up with sub-standard heating practices and sounded off."

It said H. L. Honett, heating engineer for a wholesaler member of the NWAHACA in Milwaukee, opened his address before a builder's institute class  
(Concluded on Back Page, Col. 1)

## G-E Ups Prices 7½% on Fractional Hp. Motors

SCHENECTADY, N. Y.—General Electric Co. has announced a price increase of 7½%, effective Aug. 1, on all fractional horsepower direct-current motors and generating equipment, and two lines of fractional horsepower alternating-current motors.

According to H. A. MacKinnon, vice president and general manager of G-E's component products division, this price increase results from higher material and labor costs currently  
(Concluded on Back Page, Col. 5)

## June Room Unit Sales Hit 17,313 In Philadelphia

PHILADELPHIA — Distributor sales of room air conditioners in this area in June soared to 17,313 units from 4,536 in the same month of last year, according to figures released by the Electrical Association of Philadelphia.

The June volume brought room air conditioner sales for the first six months of 1956 to 46,252, compared with 19,217 in the like year-ago period.

## BEHIND PAGE ONE . . .

### 'Customized' Freezer-Food Plan

Service, Satisfaction, and Good Food  
Builds Multi-Million Dollar Business . . . . . 6

### Figuring Residential Jobs

Hints on Sizing and Installing Air Conditioning . . . 10

### Canvas-Covered 'Run-In Boxes'

Keep Evaporators from Room Temperatures  
During Defrost Cycle Test . . . . . 16

### Servicing Weathertron Heat Pumps (4)

20

## Maintain Frozen Food Temperatures at Same Level To Bar Damage, Study Shows

CAMBRIDGE, Mass.—Recent experiments showing that not only high, but fluctuating, temperatures must be avoided in handling frozen foods were revealed here by Bernard Proctor, professor of food technology

at Massachusetts Institute of Technology. Even temperatures that vary only from 10° below to 10° above zero "are considerably more damaging than storage at zero with temperature maintained exactly at that level," Prof. Proctor stated.

This is especially true of frozen foods containing starch,  
(Concluded on Page 21, Col. 3)



## Proposed Detroit Code Changes--

(Concluded from Page 1)  
having a maximum fire rate of 3 g.p.h.

### Changes Designed To Eliminate Illegal Packaged Installations

Purpose of the changes is to eliminate illegal installations of packaged air conditioning units by heating contractors who are unable, by reason of lack of experience in the field, to qualify for a refrigeration contractor license and, installation of packaged heating units by refrigeration contractors in the same situation.

Another strong motive in the drive by the city's Department of Building and Safety Engineering for the changes is what Chief Safety Engineer Frank Drogosch describes as a "racket"

to which the city does not wish to become a partner.

Under a department ruling on advice of corporation counsel, a heating contractor cannot be prohibited from installing a packaged air conditioner as long as he attaches a rider to the contract naming the refrigeration contractor who will take out a permit for the installation and assume service responsibility for the job.

This ruling has not been working out well in practice, Drogosch revealed, for some contractors have been charging the heating contractor up to \$25 for taking out the permit without ever seeing the job for which they are directly responsible.

And then, he added, when the customer wants service, he can

call until he is blue in the face without getting it.

Although the RACCA chapter voted for the changes at the final moment, representatives at the committee meeting opposed them right down the line.

### RACCA Proposes Single License Plan

As expressed by Robert Sullivan, executive secretary of the association, the RACCA contention is that the changes would not solve the problems that they are intended to eliminate and would create more jurisdictional problems instead.

Sullivan proposed that a better solution would be to establish a single license for packaged air conditioners that would cover not only refrigeration and heating, but plumbing and electrical work as well.

"I contend," he said, "that when you need four or five

licenses to handle a fairly simple piece of equipment, by the weight of it you encourage violations.

"The failure of the city to look at the over-all problem is contributing to the problem itself.

"Why try to do the job piecemeal," he asked. "Why not look at it realistically and cover the whole problem?"

Drogosch, who chairmanned the meeting, expressed sympathy with Sullivan's point of view. However, he noted, such a license would be beyond the power of his department to promote.

Leo Gage, court officer for the department, commented, "I don't think that any realistic single license will ever come to pass. There will be too much opposition from organizations whose jurisdictions would be invaded. They tried it in Chicago

15 years ago and didn't get anywhere with the idea."

Drogosch said that while he would pass the single license idea on to his superiors, he suggested that the initiative would best come from the industry itself. If the trades themselves—refrigeration, heating, electrical, and plumbing, could come up with proposed license that they could all agree to, it would have a much better chance of winning council approval.

After the meeting, Sullivan indicated that he intended to pursue the single license idea further and would continue to study the matter.

Jay Biddle, executive secretary of the Detroit Warm Air Heating and Air Conditioning Association, said that he would like to work with the refrigeration contractors

### Detroit Has 319 Class B, C Refrigeration Contractors

There are now 319 holders of Class B and Class C refrigeration contractor licenses in the city of Detroit, Frank Drogosch, chief safety engineer for the city, revealed at the study committee meeting.

There are 707 licensed heating contractors and 241 registered heating contractors. A registered heating contractor is one licensed in another city that is permitted by reciprocal arrangement to practice in Detroit without a Detroit license.

Registered plumbing contractors number 326.

There are 137 contractors who hold both plumbing and heating licenses, eight who hold plumbing and refrigeration licenses, and 35 who hold heating and refrigeration licenses.

eration contractors on the idea of a single license.

George Pilky, representing the Detroit Association of Master Plumbers, also agreed to study the matter. He noted that his organization and the Mechanical Contractors Association of Detroit have already set up an educational fund to study jurisdictional matters between trades and to work out clear lines of jurisdiction.

Also represented in the study committee were the American Society of Heating and Air Conditioning Engineers, the American Society of Refrigerating Engineers, the Refrigeration Service Engineers Society, the Detroit Stoker and Heating Dealers Association, the Refrigeration Board of Examiners, and the Gas and Oil Board of Examiners.

The master plumbers had also previously voted against the changes because they felt the heating men were conceding to the refrigeration contractors more than they were receiving.

However, a committee was named to explain to the plumbers that the two established limits balanced out in this climate. At this, Pilkey cast an "aye" vote.

Another minor change in the refrigeration code included in the proposed alterations would prohibit holders of limited refrigeration licenses from purchasing refrigerant, inasmuch as they would not be permitted to do any servicing.



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## Emerson Firms Settle Trade-Mark Dispute

ST. LOUIS—A trade-mark infringement suit filed by Emerson Electric Mfg. Co. here against Broadwell & Co., local distributor for Emerson Radio & Phonograph Corp., New York City, was dismissed recently by Federal Judge George H. Moore here.

According to the stipulation of dismissal, the "principal parties," Emerson Electric and Emerson Radio, had settled their disputes in the case and agreed to dismissal.

Emerson Electric's complaint charged Broadwell had infringed on its trade-mark by distributing, advertising, promoting, and offering for sale room air conditioners bearing in whole or part the "Emerson" name. It also charged unfair competition and asked for an injunction.

## Rich Plan Elects Wright President

DALLAS—Ernest D. Wright has been elected president of Rich Plan Corp., the board of directors for the corporation has announced.

He succeeds Krantz Keller, whose resignation became effective June 30.

Wright was appointed executive vice president in charge of finance in 1953, when the corporation was moved to Dallas. He will continue to office at the firm's national headquarters in the Meadows building, it was explained.

Wright joined Rich Plan at its inception when the firm was a one-store operation in Mar Vista, Calif. Since that time, he has helped pioneer this concern, which is now "the only nationwide exclusive direct to the home food-freezer service," the announcement said.

## White, Apex To Merge as Ericksen To Head Easy Directors Nod Approval Washer Div. of Murray

CLEVELAND—Directors of White Sewing Machine Corp. and Apex Electrical Mfg. Co. recently approved a merger between the two firms, according to a joint announcement.

White officials explained the merger "will give greater product diversification and better utilization of existing plant facilities" and will enable the company "to realize economies" from joint operations and consolidated distribution activities.

Stockholders of White will be asked at a special meeting Sept. 20 to approve the merger with Apex and authorize an additional 200,000 shares of new preferred stock.

The agreement provides for an exchange of 102,000 shares of White convertible preferred for Apex stock, V. W. Fries, chairman of White announced.

DETROIT—Parker H. Ericksen was appointed a vice president of Murray Corp. of America, according to B. C. Gould, president.

Gould stated that Murray management is intent upon a diversification program for Murray and its divisions and that an integral part of this long range plan has been built around Murray's recently acquired Easy Washing Machine Div. at Syracuse, N. Y.

Gould said, "Ericksen will have the responsibility for conceiving and developing Murray's and Easy's long range appliance position within the industry."

"Additionally, he will be in charge of planning for the development of Easy's national distribution and in the execution of this program he is in

charge of Easy's sales, merchandising, and marketing functions."

Gould and Ericksen announced plans for the opening of Chicago headquarters for all sales, marketing, advertising, and market research personnel. Actual transfer will occur as soon as the quarters have been readied.

Ericksen will headquarter in Chicago. The Chicago location was resolved in order for the sales headquarters to be nearer to "trade show activities and traffic."

### Air Conditioned Bldg.

NEW YORK CITY—Plans for construction of a fully air conditioned 27-story building to occupy the west side of Third Ave. between 45th and 46th Sts. was announced here recently by the Turner Construction Co.

The property was recently leased from the Teachers Insurance and Annuity Association by the Central Third Corp.

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## Air Force Conference--

(Concluded from Page 1, Col. 3) tioning Section, Directorate of Facilities Support, Headquarters United States Air Force, Washington 25, D. C.

Conference program is as follows:

### MONDAY, AUG. 13

#### Morning session

Registration.

Opening remarks—Brig. Gen. C. Pratt Brown, Col. Paul K. Walker, Hq. USAF.

"Purpose of the Conference"—Wm. T. Smith, Hq. USAF.

"Air-Conditioning and Refrigeration Institute"—George S. Jones, Jr., managing director, ARI.

"Looking into the Future of Air Conditioning"—Arthur J.

Hess, president, Hess, Greiner and Pollard.

"Air Conditioning Systems in Quarters at Offutt Air Force Base"—Russell Upham, Hq. Strategic Air Command.

#### Afternoon session

"Twice a Year Is Not Enough"—Lincoln Scafe, manager, Service Dept., Trane Co.

"Management Improvement for the Installations Engineer"—Col. Paul K. Walker, Hq. USAF.

"Air Conditioning Maintenance Problems in the Azores and Bermuda"—James M. Buckaloo, Hq. Military Air Transport Service.

"How Several Difficult Air Conditioning Problems in Continental Air Command Were

Solved"—Walter F. Rugaber, Hq. Fourteenth Air Force.

"How Difficult Maintenance Problems Were Solved in Air Training Command"—James C. Barry, Hq. Technical Training Air Force.

### TUESDAY, AUG. 14

#### Morning session

"USAF Refrigeration and Air Conditioning Training Programs"—Leon F. Williams, Hq. USAF.

"Controls—Electric, Pneumatic, and Electronic"—J. H. Broome, asst. to vice president, Minneapolis-Honeywell Regulator Co.

"Personnel Development in the Refrigeration and Air Conditioning Industry"—Charles J. Brillinger, director of training, York Corp.

"Development of a Specific

Standard on Authorization of Personnel in the Refrigeration Shop"—Russell Upham, Hq. Strategic Air Command.

#### Afternoon session

"Description of 2,400-ton Central Refrigeration Plant at Maxwell Air Force Base"—D. L. McClearn, Hq. Air University.

"Central Station Air Conditioning Plants vs. Multiple Package Units"—James Carpenter, director of training and education, Carrier Corp.

"Should Air Force Policy be Changed to Permit a More Widespread Use of Multiple Package Units?"—Col. T. M. Ashton, Hq. Flying Training Air Force.

"Advantages of Central Station Air Conditioning Systems over Multiple Package Units"—Blaz Scott, Hq. Air Materiel Command.

"Replacement of Multiple

Packaged Unit Air Conditioning Installations at Clark Air Force Base, P. I."—George Beard, Hq. Far East Air Forces.

### WEDNESDAY, AUG. 15

#### Morning session

"Reheat Requirements in the Canal Zone"—A. M. Hele, Hq. Caribbean Air Command.

"ECL's and UAL's"—Donald A. Loudonback, Hq. AMC.

"The Ideal Refrigeration Shop"—A. E. Manning, vice president, Kelmore Service Co.

"Effects of Design on Maintenance and Operations"—James H. Yohn, Hq. ADC.

"Improving Maintenance Capabilities Through the Use of Adequate Plans and Specifications"—E. R. Whitman, Hq. Crew Training Air Force.

#### Afternoon session

"Trouble Shooting for System Faults"—Ralph A. Gonzales, director of application engineering, Airtemp Div.

"The Thermostatic Expansion Valve—How It Works"—Herman Spohrer, vice president, Sporlan Valve Co.

"Air-Cooled Condensers"—Warren Viessman, Hq. ARDC.

Filter Cleaning Symposium—R. S. Farr, president, Farr Co.; Frank Kerr, Hq. Command; O. M. Hardage, Hq. Air Proving Ground; Curtis Hunter, Kelly Air Force Base; E. C. Hubkey and R. W. McNall, Edwards Air Force Base.

### THURSDAY, AUG. 16

#### Morning session

"Maintenance Problems on Controls"—R. C. Marler, Eglin Air Force Base.

"Air Force Cost Systems for the Control of Maintenance Costs"—James M. Buckaloo, Hq. Military Air Transport Service.

Open forum on refrigeration and air conditioning operation and maintenance problems—Wm. T. Smith, monitor.

#### Afternoon session

Open forum (continued).

## Car Dealer Bill--

(Concluded from Page 1, Col. 4) as constituting a lack of good faith.

The bill requires that damage suits must be started within three years of the time that the alleged bad faith occurs. Under the bill, such suits can be based only on acts of bad faith taking place after enactment.

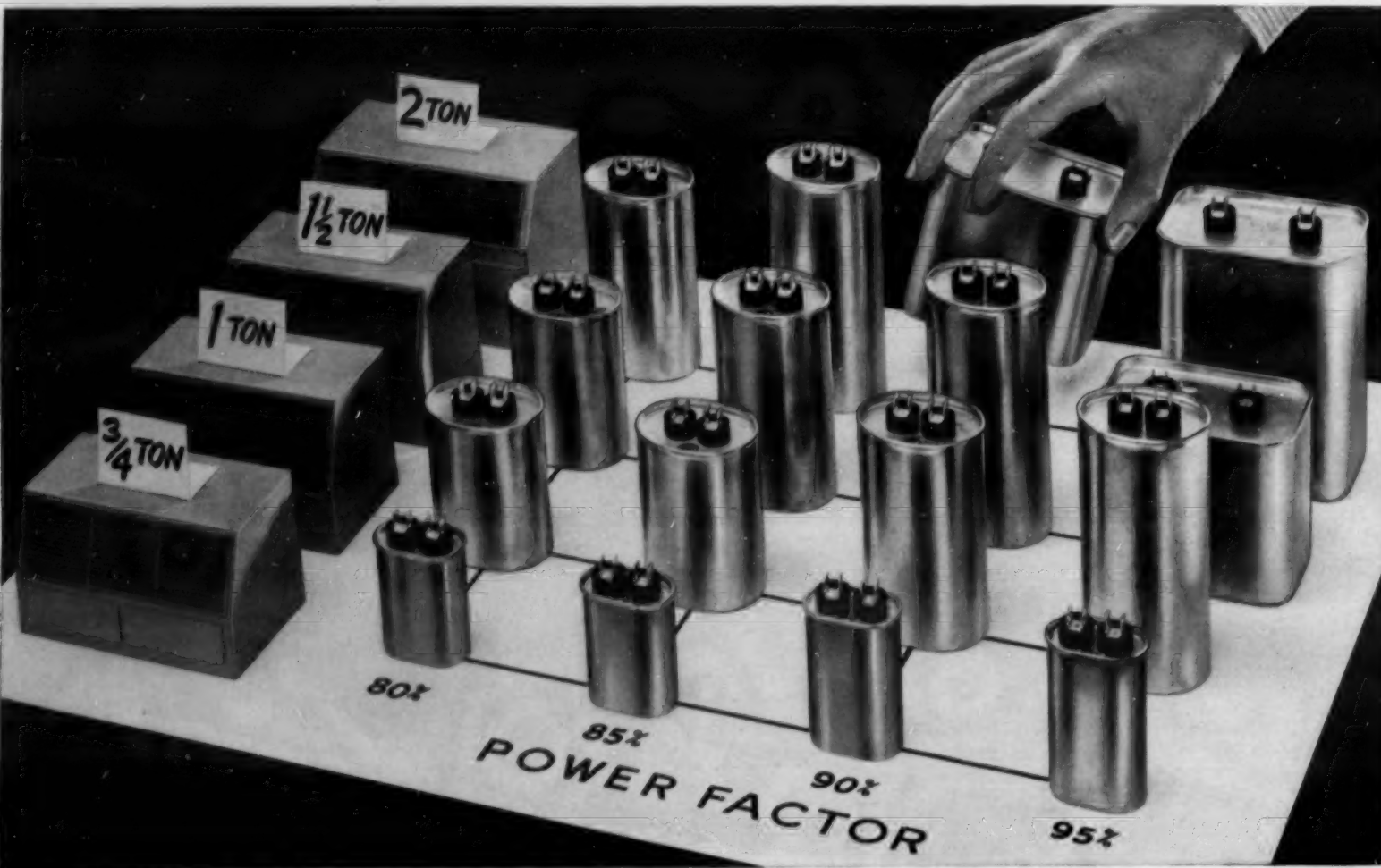
At the request of the Justice Dept., the House modified the original O'Mahoney bill so it wouldn't ban auto bootlegging or give a dealer any kind of monopoly in his sales territory.

Senate and House experts expressed opposite opinions on what affect the bill would have on auto bootlegging.

The bill states that it doesn't change the anti-trust laws in any way. This means, according to the House Committee report, that manufacturers must continue to supply a dealer who wholesales cars to other dealers, just as he must continue to supply franchised dealers.

The report said a dealer could sue for damages if the manufacturer didn't provide him with enough cars, and the fact that the dealer was selling the cars to bootlegging retailers would be no defense.

Manufacturers claim the bill would throw the whole dealer-manufacturer relationship into the courts.



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## New Orleans Advises

### Use Licensed Contractor To Plan Size, Location, Installation of Units

NEW ORLEANS—S. Logan McConnell, city director of regulatory inspections, recently advised the employment of a licensed electrical contractor before the purchase and installation of air conditioning equipment.

### Secure Competent Advice In Advance

"Such a contractor should be employed," McConnell declared, "so that competent advice will be secured in advance as to the size of the equipment required to give satisfactory air conditioning results, the proper location and installation and the assurance that same will meet the minimum requirements of the National Electric code, with no additional expense or rewiring required."

McConnell's statement was in response to a letter by James W. Barr, manager of the Better Business Bureau of New Orleans, Inc., to George W. Flach, chief electrical inspector in McConnell's division.

In noting that "numerous persons throughout the city are being served 'violation notices' for using 'plug in' air conditioners in apartments and homes," Barr in his letter asked Flach:

"Will you please advise us under what circumstances these plug in air conditioners (7½ ampere), as well as the regular ¾-ton units, may be used without violating any of the city ordinances?"

"We are just trying to get some clarification on this point because we notice that these air conditioners are being advertised widely in the newspapers and we think there should be some notice to the general public if their use is illegal for some reason or other."

In a letter to Barr, McConnell wrote that: "It is difficult to advise all of the limiting conditions prohibiting the plugging in of the 7½-ampere units or the regular ¾-ton units which generally require 8 to 12 amperes."

"The following, however, are the most generally noted violations of the National Electric Code:

### Generally Noted Electric Code Violations

"1. Installation of ungrounded units within reach of persons standing on the ground outside of a building when within eight feet of the ground. (Installations with minimum clearance of 8 ft. above ground do not require grounding of the cabinet).

"2. If unit requires more than 150 volts to ground and is not properly grounded.

"3. The installation of air conditioning units where air conditioning load exceeds 50% of the rating of a branch circuit where lighting units or other appliances are also served. The connection of a 7½-ampere air conditioning unit on a 15-ampere circuit would not comply with the National Electric Code when the existing load exceeds 7½ amps."

## Mill Firm To Build Conditioned Bldg.

GREENWOOD, S. C.—According to President Conway Still, Southeastern Loom & Machine Works, a division of Abney Mills, will build a new, modern, one-story air conditioned plant in Greenwood to replace its Greenville plant.

Still said plans are to begin work on the new 13,000-sq. ft. plant immediately.

## Copeland Adds Commercial Condensing Units for Remote Condenser Application

SIDNEY, Ohio—A new line of commercial refrigeration condensing units for remote condenser applications is now being marketed by Copeland Refrigeration Corp. through the company's manufacturing accounts and 130 authorized wholesaler outlets.

The new models are called the "RCZ Copelametic" series and have been designed for use with remotely-located air-cooled condensers or in water-cooled systems with cooling towers or evaporative condensers.

"An improved, more compact unit design permits better utilization of space," the company said. "The remote location of air-cooled condensers greatly increases the number of oppor-

tunities for air-cooled systems in commercial refrigeration—in face of water shortages, rising water and disposal rates, and special water usage fees."

Models are available for high, medium, and low temperature applications from 1 hp. through 5 hp., and for high temperature applications only in 7½ hp. ("F-12") and 10 hp. ("F-22").

High temperature units from 2 through 10 hp. are equipped with suction-gas cooled motor-compressors.



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For information write to Box 32 at the above address.

## Freezer-Food Plan Skyrockets To Multi-Million Dollar Business by Emphasizing Service, Satisfaction, Good Food

ALEXANDRIA, Va.—A "customized" freezer-food plan, built on service, satisfaction, and better foods, has skyrocketed into a multi-million dollar-a-year business here for Paul E. Conklin.

Seven years ago he started an appliance and television business with just \$200 capital. Today he heads a retail freezer-food plan, the Metropolitan-Amana Food Plan, the District of Columbia distributorship for Amana Refrigeration, Inc., Amana of Washington, Inc., and a food processing plant, Amana Food Services. The three operations reached a combined volume of \$3.5 million in 1955.

To meet this growth, Conklin recently began operations in a new \$400,000, 20,000-sq. ft.

This is the first of a two-part article describing the operations of a successful "customized" freezer-food plan. In this setup the plan operator provides his own meat processing plant, involving the installation of considerable refrigeration equipment.

This first instalment outlines some of the elements of the freezer-food plan operation. The second part will offer details on the installation in the processing plant.



FLEET OF ONE-AND-A-HALF TON Amana Food Services panel trucks delivers frozen food orders to Metropolitan-Amana Food Plan customers and other dealers' customers, within a 75-mile radius. Firm believes small trucks give faster, more economical, more efficient service. Large trucks are used for delivery of Amana freezers which are sold as part of the food plan.

# If your prospect acts like this

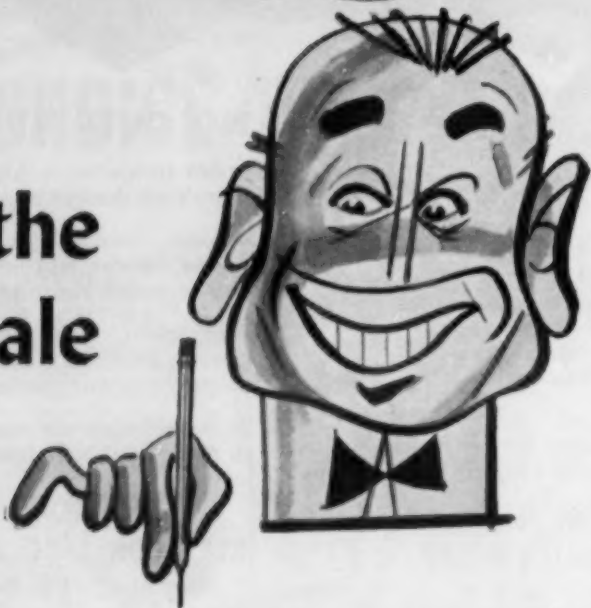


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popular **COMMERCIAL CREDIT PLAN**. To discover how **COMMERCIAL CREDIT'S** tailor-made Refrigeration Financing Plan can help you build prestige and close sales, call our office in your city or write **COMMERCIAL CREDIT CORPORATION**, 14 Light Street, Baltimore 2, Maryland.

**COMMERCIAL CREDIT CORPORATION** A service offered through subsidiaries of Commercial Credit Company, Baltimore... Capital and Surplus over \$190,000,000... offices in principal cities of the United States and Canada.

headquarters which contains what is described as the nation's largest food plant devoted to serving freezer owners in one metropolitan area. This Amana Food Services is a wholesale operation, supplying food for Metropolitan-Amana, as well as the other Amana food plans in the area.

Five branches are also operated in Virginia, Maryland, and the District of Columbia.

### Customer Survey Shows Complete Satisfaction

A recent survey of Metropolitan-Amana Food Plan members, conducted by an independent research group, indicates that the great majority—94.85%—are completely satisfied. Over 85% said they shopped less often now, 80.47% did less impulse buying, 70.16% liked use of leftovers, and 58.59% indicated they cook dishes or meals ahead.

Better quality foods was given by 87.7% as being the factor they liked best about membership in the food plan.

Of the satisfied customers, about 81.73% had food budgets and 68% of them lived within the budgets they had set up in pre-food plan days. Of the remaining 32% who exceeded their budget, more than three-fourths felt that food plan justified its cost.

### Customer Service Seen As Vital to Success

Convinced that happy customers are the lifeblood of business, Conklin makes certain that customers first are sold properly on the basis of the family's food needs and budget. Once the original freezer-

food plan order has been placed, Conklin believes a food plan must start its work—going out of its way to insure that the customer is served properly with her food orders.

At Metropolitan-Amana, salesmen call back on the customer at least four times in the first four months after a sale to be sure the customer understands the freezer and is satisfied with the food. An important product of these call backs is the radiation leads they furnish the salesman, it was said.

Amana Food Services sells principally custom-cut sides of beef, from 140 to 160 lbs. Some customers don't want soup bones or short ribs. So the firm strips the meat from these pieces, grinds it, and delivers as ground beef. Steaks may measure anywhere in thickness from 1/2 to 3 1/2 in., while roasts vary from two to five lbs. Ground beef may be wrapped in 1/2 to 2-lb. packages as desired. The customer may want cube steaks wrapped one or eight to a package, Conklin added.

To be sure the homemaker is satisfied with meat quality and service she receives, each customer is welcome to visit the processing room where meat is cut, trimmed, and packaged. She can also enter the aging room and select the side of meat she wants. If requested, cook-

(Continued on next page)

# Redmond

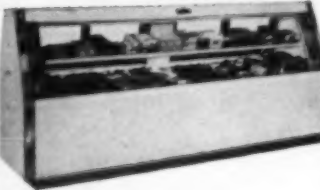
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THREE assembly lines handle meat at all stages from the aging room to the blast freezers in the processing plant. After hanging in the aging room for 14 days, sides of beef are moved by the overhead rail in the background into this processing room for sawing, trimming, wrapping and marking, and stacking for overnight storage in the walk-in.



SERVICE MANAGER Gene Featherall checks conditions in one of the five walk-in freezers. This 22 by 36 by 10-ft. cooler is a normal temperature box which maintains 38° F. for beef storage and aging. The box is refrigerated by two "HP" Brunner units, each connected to two Kramer half-round blower coils.

## Food Freezers

Also emphasized is the procedure followed in delivery of food. And salesmen must be prepared to cook certain pieces of meat if necessary.

In 1952, Conklin's firm sold an average of 40 freezers and food plans a month. In 1953 that was upped to 50 to 60 monthly with a sales volume of \$400,000. It jumped to 90 every 30 days in 1954 with a volume of \$750,000. Last year an average of 100 freezer-food plans was sold each month, involving a sales volume of \$900,000 in freezers alone, it was pointed out.

Conklin supervises all aspects of the business directing a staff of 160 in all three operations. One hundred of these are salaried employees in the food plant and in the distributorship, 60 are retail food plan salesmen who work on commission. Turnover is said to be exceedingly low.

(To Be Continued)

## 'Customized Freezer Food Plan'--

(Continued from preceding page) ing instructions are also included.

Top grade beef is stored at least 14 days in a cooler to properly age before cutting, it was noted. After it is cut and wrapped, it is fast frozen to keep maximum blood juices and flavor.

Freezers are delivered in two large trucks, Conklin said. Two men are assigned to each truck, which can deliver eight freezers a day.

### First Orders, Re-Orders Average \$158

First food orders average \$158, as do re-orders, it was explained. An order or re-order of \$25 is the minimum. However, the firm will pick up any item with which the customer is dissatisfied. One, having eaten a turkey until there was nothing left but bone, complained that it was "sour." The company didn't argue. Another turkey was delivered immediately.

"We're ready to spend even \$100 to satisfy any customer," Conklin emphasized.

Minimum food order financed is \$100, with payments running over a 3 to 6-month period. There is a down payment only for the freezer, not the food.

### 3 Re-Orders Claimed For Every New Order

Conklin claims to get three re-orders for every new one. He says 80 to 90% of past cus-

tomers re-order. Now handling 38 orders a day, the new plant

has a capacity of 100 orders. Food business is now running about \$1,250,000 annually, and is increasing at the rate of \$10,000 a month, it was further noted.

Even old hands take refresher courses in Metropolitan-Amana's continuous training process. Training stresses that the customer should be made to feel her business is appreciated.

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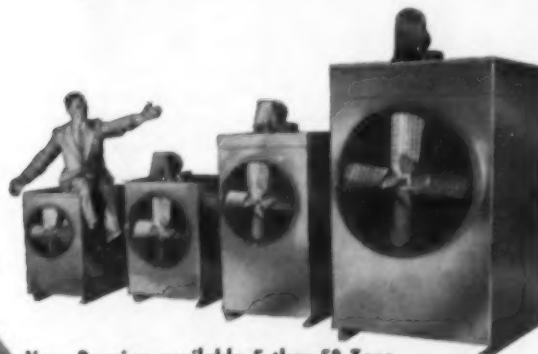
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223 ASH STREET - AKRON, OHIO



## Inside Dope

By GEORGE  
F. TAUBENECK

(Concluded from Page 1, Col. 1)  
sul Chemical Co. of Marinette,  
Wis.

Ansul has developed a unique method of anchoring the belt to the vehicle's frame. The belt's harness assembly provides metal to metal contact for all movement; hence there is no danger of metal fittings weakening and wearing the belt webbing.

Installation is easy—only three holes must be drilled in the frame for two belts. This assures easy change and replacement, too, for industrial fleet operators or owners who trade in cars frequently.

In the belt assembly, the one-way threading buckle can be tightened easily, but will not loosen under pressure. The satin-finished aluminum latch

provides the only means for unbuckling the belt. The buckle itself consists of a heat-treated steel base which is chromium-plated and satin finished.

Saf-Drive automotive seat belts come in three standard models. In addition, Ansul specializes in custom installations for trucks, busses, emergency vehicles, and sports cars. A special back seat installation is also available.

The three standard models include one for the driver's seat only, individual belts for driver and one front seat passenger and individual belts for driver and two front seat passengers. The price is \$10.75 for a single passenger installation; \$19.75 for a two-passenger installation. Distribution has been set up through Ansul sales offices in Michigan, Indiana, Illinois, and Wisconsin.

End of free advertisement for our friends at Ansul.

## Verse of the Week

In every way  
In which we live,  
Our values are  
Comparative.  
Observe the snail  
Who with a sigh,  
Says: "See those turtles  
Whizzing by."

The guy who thinks our jokes  
are rough  
Would quickly change his  
views  
If he'd compare the jokes we  
print  
With those we get but never  
use!

## Wisdom of the Year

Economic forecasting has always been a fanciful blend of wishful thinking, whistling in the dark, and hope springing eternal. Although composed largely of mumbo-jumbo and non-sequiturs, it is taken quite seriously by all concerned. From

years of reading and analyzing stuff, herewith a few precepts for the preceptors:

Avoid loose predictions like saying business will be up 10% or down 5%. That indicates basic uncertainty.

Be precise—if it can't be checked. Specify that business will rise 7.32% next year unless something happens (something always does). This provides an out, no matter what happens.

Quoted from *Arizona Progress*, published by Valley National bank, Phoenix, Ariz., a followup gem:

"The trick in forecasting is to say absolutely nothing—in several thousand well chosen words. Lead off with a heavy barrage of statistics. This will confuse everyone, including yourself. But never use round figures. If the national debt is \$274,658,923.17 be sure to say so—and don't laugh off the 17¢. After all, this is equivalent to

a nickel when the Republicans were in before."

"Don't overdo your optimism. A disillusioned bankrupt may save the forecast and throw it in your face someday. On the other hand, there is an unwritten law against being pessimistic. No one wants to be a killjoy and, besides, real estate salesmen can be pretty nasty if you queer a deal for them. The best thing is to be strictly ambiguous, like Nostradamus. It is good, clean fun, and quite simple, once you get the hang of it. So hie with us now to the Land of Make-believe where the wish is father to the thought and two plus two may equal five, six, or even 10.

"Barring war or peace, there is practically nothing to worry about. Of course, adjustments will occur and some businesses will go 'poof' but, viewed broadly, this is a healthy thing. Less competition, you know. Indications are that people will continue to eat, sleep, and have babies throughout most of 1956. Don't sell America short, but, if you do take a gamble and lose, remember we told you so."

## Quotes of the Week

"A politician thinks of the next election. A statesman considers the next generation."—JAMES FREEMAN CLARKE.

The fellow in jail has a guaranteed job. He is also guaranteed food and shelter. If he is in for life he is guaranteed an old-age pension. People who want everything "guaranteed" in this world have to take the surrender of freedom that goes with it. The only organization that can "guarantee" is the government, and the only way the government can guarantee is to put us all in a virtual chain gang and divide the crops. I'll take freedom and the troubles that go with it.—DON HEROLD.

It takes a pound of instruction to produce an ounce of assimilation.—*Education Digest*.

Anger causes people to open their lips and close their eyes.—GEORGE DAY.

Common sense in an uncommon degree is what the world calls wisdom.—*Edison of Canada*.

# Now! YOU CAN SELL EVERY ICE USER with America's Only Complete Line of AUTOMATIC ICE MACHINES!

## HERE'S WHY AS A SCOTSMAN DEALER YOU ARE GUARANTEED MORE PROFIT...

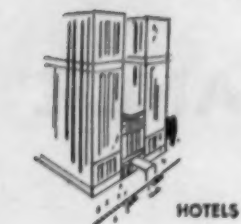
- You make more sales, because you can offer a particular model for every ice need!
- You build more sales volume... attractive user prices eliminate cost objections!
- You keep more profit... your profit arrangement is liberal!
- You are free from service worries... Scotsman machines are dependable... proved by the thousands!
- You avoid installation grief... a Scotsman machine is simplicity itself, lowest installation cost there is!
- You are backed by the industry's most powerful national advertising program, plus local promotion plans!

When you add these benefits up, you can't miss the conclusion to go Scotsman!

And what a boost you'll get from user reaction to Scotsman Ice! Scotsman Cubes are not shaped by accident. They are formed in their perfect contours after long research by Scotsman engineers to find the most useful, most admired ice cube shape. Scotsman found it, and then designed machines to make it. Big, solid, round, crystal-clear, 100% pure... there's no cube so universally popular as the Scotsman Cube!

For users who require "crushed" ice, Scotsman Super Flakers produce individual bits of hard, pure ice, free-flowing and easy to handle. Scotsman crushed ice is the most economical ice in the world!

Look at part of the Scotsman line shown below, and write immediately to get complete franchise information.



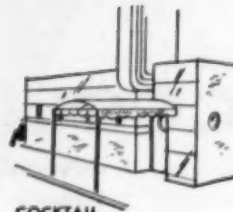
HOTELS



HOSPITALS



RESTAURANTS



COCKTAIL LOUNGES




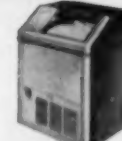








DINERS AND DRIVE-INS



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 <p>Model SF-2WSE Super Flaker, with storage bin. Produces up to 350 lbs. daily.</p>	 <p>Model SF-3WSE Super Flaker, with storage bin. Produces up to 1050 lbs. daily.</p>	 <p>Model SF-1E "continuous flow" Super Flaker. Up to 350 lbs. daily.</p>	 <p>Model SF-2E "continuous flow" Super Flaker. Up to 550 lbs. daily.</p>	 <p>Model SF-3E "continuous flow" Super Flaker. Up to 1050 lbs. daily.</p>

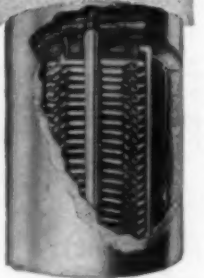
Every Scotsman Ice Machine operates on standard electrical outlets.



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condensing unit. Write for  
literature.

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## Dog-Goned Comfortable Doghouse



COMFORT-LOVING St. Bernard named "Baby" invites a wee neighbor to share the delights of her specially built kennel equipped with Carrier year-round climate control. Baby's owner says air conditioning keeps her coat sleek, her physical condition healthy.

## Pedigreed Pup Loves Her Air Conditioned Kennel

DALLAS—Now that her kennel is air conditioned, "Baby," a pedigreed St. Bernard owned by Dr. Murry Schonfeld, seldom ventures outdoors during summer "dog" days.

Comfort cooling is said to have had a notable effect on the dog. She automatically retreats to her cool bedroom when the thermometer exceeds 80° F., it was added.

## Friends Like Air Conditioning Too

Baby's friends like air conditioning, too. Once they sniffed the benefits of "this way of life," the conditioned kennel became a popular meeting place for the neighborhood "doggy set," it was reported.

In fact, it is claimed they like the Carrier year-round climate controlled doghouse so well, Baby is sometimes forced to fight for her rights as queen of her castle.

## Retains Appetite, Glossy Coat In Hot Spells

Thanks to her air conditioned bedroom, Baby managed to retain her appetite and glossy coat during last summer's severe heat spells, Dr. Schonfeld reports. The crafty canine avoided that "hangdog look" worn by fellow brandy carriers not quite so fortunate in life as she.

Among dogdoms high social circles, the oversize pup answers to the impressive name of Sanctuary Woods Autumn Gale. This resounding title isn't too heavy for her to carry, for despite her diminutive-sounding

ing with keeping Baby in the pink of health, ready for stiff show competition.

Baby's home is a converted utility space measuring 4 by 5 ft. adjoining the garage of the Schonfeld's home which is fully air conditioned by a Carrier "Weathermaker" unit.

Filter-pure air, ducted from the home's central air conditioning system to a ceiling diffuser in the dog's house, provides a constant temperature of about 72°. Dr. Schonfeld further stated.

## Comes and Goes As She Pleases

A small trap door, complete with weatherstripping, is built in the exterior door of the utility room to permit Baby to come and go as she pleases.

To carry out the St. Bernard motif, and to add a decorative touch, the outside trap door features art work depicting the Swiss Alps and the inevitable

brandy keg, it was noted.

The Schonfelds find that Carrier air conditioning adds another touch when Baby cavorts inside their home. Since her coat stays in "top" condition, there's virtually no shedding of hair and the furniture stays remarkably clean, it was added.

According to Burton T. Kehoe, Carrier's residential air conditioning manager, air conditioning for show dogs has become a fairly common, if miniscule, part of the industry's animal business. Letters from owners, Kehoe stated, indicate that air conditioned space contributes directly to the dog's disposition, appearance, and appetite.

## Cooling Firm Formed

CHARLESTON, S. C.—Weathermasters, Inc. has been granted a charter of incorporation to deal in air conditioning and heating equipment, listing capital stock of \$10,000. R. W. Jantzen is the president.

## Higgins Named Chief Engineer at A. O. Smith

MILWAUKEE—W. W. Higgins has been appointed chief engineer of the A. O. Smith Corp. on the staff of Executive Vice President F. S. Cornell.

Until recently Higgins was director of engineering at the corporation's Permaglas Div. in Kankakee, Ill., where he was responsible for product engineering and development of Permaglas water heaters and domestic heating and air conditioning lines.

Since joining A. O. Smith at Milwaukee in 1930 Higgins has had extensive experience in the development of glasscoated steel used in eight of the company's 20 product lines. He took over the post of chief engineer in 1948, and was named director of engineering in 1952, it was explained.

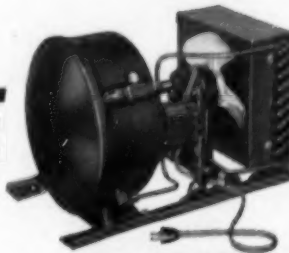
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hermetic compressors, hermetically sealed condensing units or hermetic refrigeration systems, a Contract Department Sales Engineer will help you determine the model best suited to your needs. Call or write today.

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## Figuring Residential Jobs

**'Box' the House; Undersize Borderline Calculations To Control Humidity, Movement Of Air; Provide Outside Air Duct; Plan Heat Load with People Set In Active Areas**

By George M. Hanning

E. LANSING, Mich. — Some helpful hints on figuring and installing residential air conditioning jobs were offered to dealers here recently during a conference sponsored jointly by the National Warm Air Heating and Air Conditioning Association and Michigan State university.

The information offered here was gleaned from a three-day course on residential air conditioning conducted by C. L. Grandstaff and Eston Swain, application engineers for the C. A. Olsen Co.

The pair were teaching the dealers how to calculate the heat gain and loss for a combined heating and cooling system by using the NWAHACA manuals and work sheets.

### 'No Magic Number' Tells What Size Unit To Install

They admitted that this method is time consuming and complicated. But, Grandstaff declared, "We don't believe there is any magic number by which you can multiply the square feet of floor area and tell what size of air conditioning unit to install. You have to figure the various factors involved."

### 20 Mins. To Figure House as Box To Size Equipment Properly

"Take 20 minutes to figure the house as a box and you can properly size the equipment for your prospect," Swain added. "Then you can give the owner figures that apply to his house rather than a general estimate based on a house that looks like his. He is entitled to that much. And this personal consideration may make the difference in selling or losing the job."

### Considerations In Sizing of System

Grandstaff emphasized that it is better to undersize the cooling equipment rather than oversize it, if your calculations put you on the borderline between two sizes of equipment. However, he cautioned against sizing more than 15% over the rated capacity of the equipment.

Smaller size equipment gives better control of humidity and air movement, because the compressor must run longer. The more the compressor runs the more dehumidification that will take place. And lower humidity will do as much for human comfort as lower temperature,

sometimes more, he indicated.

When a house is tightly constructed, as more and more of the better built ones are, it is necessary to provide an outside air duct for the system, according to Swain.

### Revitalizes Air, Dries Up Moisture

This is needed to revitalize the air in the air conditioned space, to help dry up moisture in the house, and to put a slight pressure inside so that hot air is not so likely to come in when doors are opened. The same is true on the heating cycle. Even in heating, he noted, the prob-

lem today, is not so much how to add humidity to the home but how to get rid of it.

When figuring the heat load for a speculative house, where you do not know how many people are going to occupy it, Swain suggested that the load be figured on the basis of two persons per bedroom, plus one for a den or nursery.

Then, when figuring room loads, distribute the people into the active areas: the adults in kitchen, living room, and dining room; the children in bedrooms.

Grandstaff explained that the static pressure rating of a blower tells how much work the blower can do over and above taking the air over the heating

or cooling surface. It represents the blower's ability to suck air in and push it out.

### Most Blowers Rated at .2 In. Static Pressure

Most blowers, he said, are rated at .2 in. static pressure at water gauge. Whatever the static pressure, though, you cannot use more than that amount in the distribution system. However, you can divide it between the return and discharge sides of the system as you wish.

For instance, he said, it is common in perimeter heating systems to use .05 in. static pressure on the return side and 1.5 in. on the discharge side.

In view of this, Grandstaff commented, you should check with the manufacturer's specifications if you intend to add a cooling coil to a furnace.

The coil and filter might add more static pressure than the blower can handle. In that case, putting in a larger blower may actually give less air instead of more.

The remedy would be to put in a parallel air conditioning unit capable of handling the higher static pressure.

In figuring duct sizes, Grandstaff advised, the width of the duct should never exceed four times its depth. Otherwise, a noisy duct will result.

### Standard Stud Space Only Equal to 7-In. Pipe

When using a standard stud space for return air stack, he cautioned, remember that it will take only the equivalent of a 7-in. round pipe. If a larger size

(Concluded on next page)

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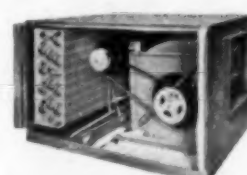
Backed by one of the world's best known brand names—American-Standard—here's *everything* you need—air-cooled or water-cooled—to meet the demands of the rapidly expanding residential and commercial cooling market. Here's top quality at competitive prices with a full margin of profit for you.



New 5 hp Horizontal Air-Flow Evaporator Unit for Air-Cooled Systems



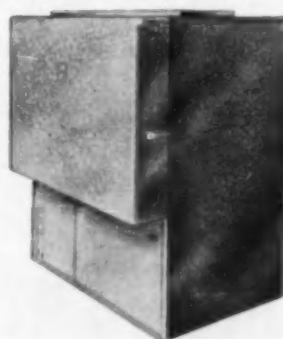
New Counterflow Evaporator Unit For Air-Cooled Systems



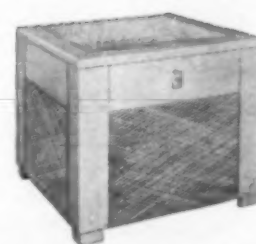
New Blower-Equipped Evaporator Unit for Air-Cooled Systems



New Year 'Round Air-Cooled Unit Equipped for Gas-Fired Heating



New Year 'Round Air-Cooled Unit Equipped for Oil-Fired Heating



New 5 hp Air-Cooled Condensing Unit (in addition to 2 hp and 3 hp)

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## How To Figure Home Jobs--

(Concluded from preceding page) multiply the c.f.m. handled by three, he said.

### Floor Return Grille Creates Drafts

When selecting diffusers for a combination heating and cooling system, he said, choose one that will handle the largest c.f.m. required for that particular duct run, whether it be for cooling or heating.

When sizing diffusers, try to stay between 500 to 600 f.p.m. on discharge and permit no more than .03 in. pressure loss. Place the diffuser more than 5 ft. up the wall—for high wall discharge—and less than 8 ft. Diffuse the air so that it will stay off people and yet will not strike the ceiling and bounce back down, Grandstaff added.

To determine the amount of free area needed for a grille,

Swain advised the dealers never to put a large floor return grille in a room where people are sitting. The velocity of air going to the return grille will create drafts, he explained. Instead, put the grille in a closet or hallway when you use a common return.

Discussing extended plenums, Swain noted that this is a pressure type system and not a velocity system. The duct runs off the plenum are filled by internal pressure and not by velocity.

Therefore, he said, an extended plenum can never run longer than 35 ft. and no more than eight runs should be taken

off it. Because of the very high velocity pressure at the blower, no runs should be taken off for the first 18 to 24 in. To do so will create too much turbulence in the plenum.

The extended plenum, he said, builds up a high internal pressure at the far end of the plenum. As a result, you should not take a run off at the end.

In the back 20% of the plenum, he added, bursting pressure is so high that a stub fitting should be used on end runs to reduce the pressure. Otherwise, on the heating system, you will get too much heat through the end runs. He suggested that at least 8 in. be left at the end of the plenum as a cushion on which to start the reverse pressure.

### Most 'Sick Runs' Near Blower

"If you have sick runs," he declared, "nine of 10 times



TWO QUEENS will reign during Better Heating-Cooling Week, Aug. 6-11 due to the extremely close vote in the "Queen Comfort" contest. There almost was a three-way tie with tight voting between Louise Riley, left, (Miss Summer Cooling), Mae Conley (Miss Sunny Warmth), and Nan Walker, not shown, (Miss Healthful Heating). The two chosen, pictured with a combination water-fed heating and cooling unit, will be available for personal appearances. Contractors and wholesalers who were enthusiastic in their response to the contest by sending in \$1 and \$5 contributions to the campaign will receive big four-color counter cards showing the two Comfort Queens.

they will be near the blower."

A true extended plenum will taper to the end so full filling pressure and velocity are maintained.

## Lau Balances, Ships Electro-Blower Units, Increases Production

DAYTON—Announcements of product improvement, better packaging, and new production schedules highlighted a two-day quarterly sales meeting of the Blower Div., Lau Blower Co.

In charge of the meetings was William W. Morrissey, sales manager for the Blower Div., who announced that the new "Preslock" wheel will be incorporated into the most popular of the "A" series blowers within the next year.

"We have been producing the A-15 with the new Preslock wheel since April of this year," Morrissey noted. "Where the old A-15 blowers operated at a maximum r.p.m. of 1,000 at a maximum static pressure of 1½ in., the new blower will operate at 1,500 or more r.p.m. against a static pressure of 2 to 3 in."

"We hope eventually to get to the point where there will be a Preslock blower in every 'A' series blower leaving the plant," he said. "New tooling and equipment costs for Preslock wheels will be \$200,000."

Morrissey also announced that Lau now has the balancing equipment necessary for full-scale checking of the new electro-wheel blowers.

"It is virtually impossible," he stressed, "to individually balance the motor and the wheel. Better results are obtained if they are balanced in the factory by a single device."

"For that reason, all electro-wheel blowers are being shipped as complete units, and each will have been balanced exactly before leaving the factory."

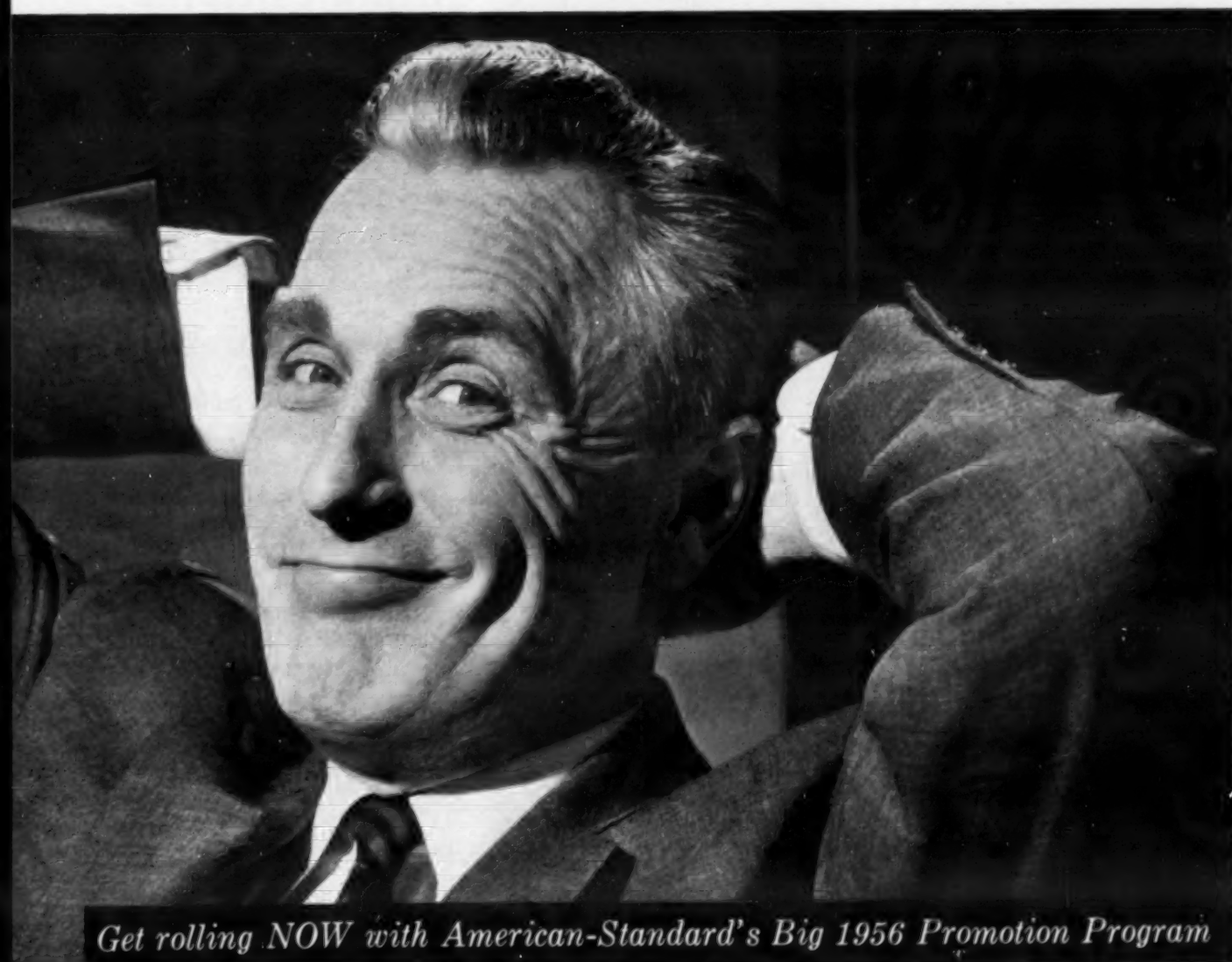
A new twin-blower unit has been worked out, according to Morrissey, which will have all the qualities of previous units, but will allow Lau to pass a 15% reduction along.

Also announced at the meeting was a new method of packaging parts for the Lau "econopak" blowers in four standard discharge positions.

Customers wishing to buy blowers in quantities of more than 150 will now be able to purchase parts packages in quantities for mass assembly.

Previously, there was a parts package attached to each blower: with the new packaging available, each part will be available in quantity so that mass production schedules can be planned by the customer.

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by

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## Milestone of Progress in Statistical Reporting By Air-Conditioning & Refrigeration Institute

Perhaps nothing is so indicative of an industry's arrival—in terms of honesty, integrity, and maturity—as its willingness to reveal actual sales and production figures.

**Concealment is a device** of "little men"—folk who are fearful of present and potential competitors, afraid of tax examiners, or scared that honest revelation will show them up as being smaller fry than they've pretended.

Only an industry which has arrived (is sure of itself and its future, and assured of respect) gives out accurate statistics. Examples: steel, oil, electricity, chemicals, automobiles. They have substantial pride, so they have nothing to hide.

That's why AIR CONDITIONING & REFRIGERATION NEWS was proud to present, in its July 16 issue, ARI statistics on compressor shipments for the first quarter of 1956.

That first publication of such figures was a milestone in our industry's progress.

Much more needs to be done, of course, in this direction. Many other segments of the scattered yet loosely cohesive refrigeration and air conditioning industry haven't yet agreed to report their actual production, sales, and inventory arithmetic.

**But the log-jam has been broken**, thanks to ARI and to persistent appeals by AIR CONDITIONING & REFRIGERATION NEWS ("the Conscience of the Industry"). Unashamedly—as a matter of fact, happily—this weekly newspaper is receiving applause for the welcome result of its campaign for full reporting of accurate industry statistics.

Editors' personal behind-the-scenes work with influential individuals in our industry, plus crusading editorials, helped bring about the formation of ARI.

What was our selfish purpose in helping amalgamate previously rival associations, and recruiting stubbornly independent outsiders, into the ARI?

**Answer:** We wanted to publish dependable statistics. And that couldn't be done

when no single association represented the entire industry.

**In this day and age**, statistics often are farcical. Let's look at the testimony of syndicated economist Sylvia Porter:

"Some time ago, I quoted an estimate that the American woman spends 85% of all the money spent in this country. Shortly after the article appeared, I received a call from an editor.

"What was the source for your 85% figure?" he asked.

"Promptly, I gave him the name of the organization.

"I recall vividly his silence before he said,

"Well, this is interesting. Your 'source' just phoned us to ask permission to quote your article as the authority for the statistic. They said they have been using the figure without knowing where it came from and they were glad to be able to trace it to you."

"That taught me a valuable lesson. It also sent me on a long search for the origin of the statistic—a search which finally led me to the conclusion that it was strictly folklore."

Down through 25-odd years it has been the observation of AIR CONDITIONING & REFRIGERATION NEWS that much of the "statistics" on the industry we serve have been dreamed-up, false, invalid, or non-existent.

**All that time we have campaigned** for truth in reporting industry statistics. Hence, it is with pardonable pride that we present the first of ARI's honest (no guess) figures on compressor shipments. This is a key figure for the industry.

And we congratulate those ARI members who had the courage to contribute them. Let's name those companies: Airtemp, Brunner, Carrier, Copeland, Curtis, Frick, Frigidaire, General Electric, Hussmann, Kelvinator, Lehigh, Servel, Tecumseh, Trane, Vilter, Westinghouse, Whirlpool-Seeger, Worthington, and York.

All hail!

Electronic brains perform fantastic feats of calculation, but they cannot predict the outcome of football games or horse races.  
—IBM.

There is a lot of talk about maybe having a woman as president, but there is no danger—a president has to be at least 35 years old.

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VOLUME 78, No. 13, SERIAL No. 1,428, JULY 30, 1956

## Spirit of Private Enterprise

"I am the Spirit of Private Enterprise. Wherever I have existed freedom of mind and body have existed. Wherever I have been murdered by collectivist laws and government strangulation, freedom of mind and freedom of body have died.

"I was the physical lever of Athenian civilization. I died in the collective feudal ages. I was resurrected in the Renaissance, beginning the modern age. With the rebirth of free private trading came the fastest expansion in the arts and sciences the world has ever known.

"I, Private Enterprise, have brought men of the same countries and men of distant countries closer together in a friendlier intercourse than all the socialistic and communistic doctrines combined. My trade routes have been the routes of human progress.

"I am the expression and sustainer of all that is lordly in the human soul—SELF-RELIANCE, the ADVENTUROUS SPIRIT, emotional and mental INITIATIVE, AMBITION, and INVENTIVE RESOURCEFULNESS.

"With my rebirth in the Renaissance, the human level of living began to rise. The shackles on slave labor began to rust and crack. Money became international. Men at my touch took on something of the aspect of a creative God. In my brain was born every creature comfort you enjoy.

"I am FREE BUSINESS, big and little, on which civilization alone depends. I am the body of a great spiritual entity—LIBERTY."

—South African Business Efficiency.

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## Writer Tells How To 'Do-It-Yourself' Step-by-Step on Through-the-Wall Room Air Conditioner Installation

NEW YORK CITY—For the handy man who wants to make a hole in the wall of his home to install a room air conditioning unit, Walter Ian Fischman, home and repairs writer for the *New York Daily News*, offered a few helpful hints in a recently article.

Deciding he was going to install a through-the-wall air conditioner in his bedroom, Fischman did the job himself, then wrote a column about it so others could benefit by his experience. He worked with a Lewyt through-the-wall air conditioner.

"To cut down on costs," he declared, "I installed the air conditioner myself. I bought a new type of unit that's becoming popular. This job is installed in a hole cut through the wall."

Fischman went on to describe his "You Can Do It" adventure, telling his readers step-by-step what to do.

### Measure Room, See Which Way Windows Face, Give Data to Dealer

First the homeowner should measure the room in which the air conditioner is to be installed, find out which way the windows face, then give this data to the air conditioning dealer and let him figure out how large a unit is needed.

After selection of type and size, the "do-it-yourself" fan should mark off with masking tape the wall area to be removed. Then chop a hole through the inside wall. Use a little keyhole saw with a fine blade and try to be as neat in the cutting as possible.

### If Necessary, Call In Professional Electrician

Should there be an electric BX cable in back of this inner wall, a professional electrician can shift the wires so they will be out of the way. He can also put in the electrical outlet for the air conditioner in case there isn't an adequate one within reach.

From the outside the handyman should begin cutting through the wall in the proper place. In case of a wood house this will involve more sawing. Brick or masonry is tougher. To make a hole in a brick wall, chop out one brick with a cold chisel, and then pry other bricks

loose to get the right opening.

If wood studs are in the way of the opening, saw them out. There is no need to worry about weakening the wall because the case will brace the opening.

Slide the empty metal case of the room unit into the opening in the wall from the outside. Fasten it in place with wood screws. Any necessary patching around the case should be done at this time. Fill in around the case on the outside with cement or wood trim and fasten wood molding around the inside.

Actual air conditioning unit is then slid into the case from the outside. Once in place, put on the inside grillework and the job is finished.

## Hospital's Single Rooms To Be Conditioned

COLUMBIA, S. C.—Air conditioning of all private rooms at Good Samaritan-Waverly hospital has begun with funds received from a Ford Foundation grant, it was reported here recently.

Operating rooms and delivery rooms were previously air conditioned, and with the new equipment approximately 30% of the hospital is air conditioned, a hospital spokesman said.

## YMCA Gets Cooling

CLEMSON, S. C.—Under a \$170,000 modernization program at the Clemson college YMCA building, 15 modern air conditioned bedrooms will be provided and the entire main floor will be air conditioned, it was announced.

## 880 Home Room Air Conditioners Sold In May In Chattanooga Area Marks 19% Rise over '55 Mo.

CHATTANOOGA, Tenn. — Some 880 room air conditioners were sold to residential customers here during May, the Electric Power Board of Chattanooga announced here recently.

This was a 19% increase over the same month last year.

The utility also reported that home freezer sales during May were 28% ahead of last year

and clothes dryer sales were up 26%. Carbage disposer sales and automatic washer sales held even.

Refrigerator sales, however, dropped 21%, ranges 3%, conventional washers 19%, and dishwashers 67%.

Unit sales, average unit price, and total sales value for these appliances during May were as follows:

Appliance	Units	Average Unit Price	Total Sales Value
Air Conditioners	880	\$ 316.60	\$278,608.00
Refrigerators	462	273.45	126,333.90
Home Freezers	174	399.50	69,513.00
Ranges	451	251.37	113,367.87
Clothes Washers, Conventional	123	140.73	17,309.79
Clothes Washers, Automatic	398	249.70	99,380.60
Clothes Dryers	113	186.40	21,063.20
Dishwashers	10	379.95	3,799.50
Garbage Disposers	1	99.95	99.95
Heat Pumps	1	2,800.00	2,800.00

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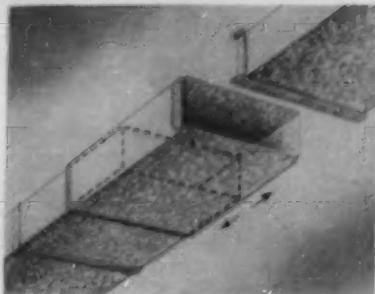
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What's New



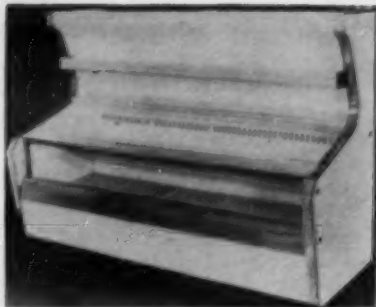
tion of stack duct can now be installed by telescoping the fitting to fill the opening. Internal and external "lip-seal" flanges provide "wiping" action which assures tighter connections than are possible with "cut-notch-join" methods of installing fill-in sections.

Duc-Pac Introduces Sleeve-Type Fitting

**KEY NO. F-750**  
EAST LONGMEADOW, Mass. —Duc-Pac, Inc. has developed a new telescopic connector fitting which speeds installation of "Duc-Pac," flat duct and fittings for warm air heating or air conditioning installations.  
The new product, called "Adjusta-Duct," is an adjustable sleeve-type fitting which eliminates all cutting, notching, and joining of "fill-in" sections of stack duct. With Adjusta-Duct, a fill-in sec-

Friedrich Adds Colored Dairy Refrigerators

**KEY NO. F-751**  
SAN ANTONIO —With color the keynote in store design these days, Friedrich Refrigerators, Inc. has "gone all out" with new "Color Dynamics" in its new "Superline" refrigerators, the company announced recently.  
In addition to traditional white, Superline cases are offered in "Golden Yellow," "Shell Pink," "Mint Green," and "Frost Blue." A descriptive brochure is available showing Superline in color with a chart of coordinated refrigerator colors and wall colors as chosen by nationally known color consultants.



Superline model S48R self-service dairy refrigerator is an example of the modern styling of the Superline series.  
"The sloped case front and increased capacity offer the shopper a large selection of merchandise within easy reach," it was stated. "An optional two-shelf, 70-in. superstructure provides a high interest area to display related products."  
The Superline dairy refrigerator incorporates the "Floating Air" refrigeration system.

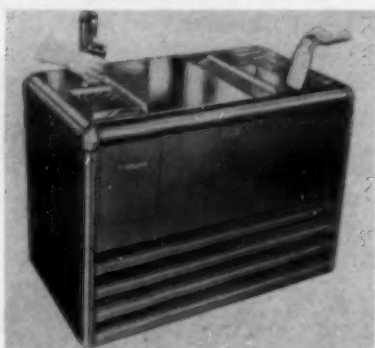


Sliding Glass Top Merchandisers Produced

**KEY NO. F-753**  
DAYTON —Two new sliding-glass top merchandising cabinets were announced here recently by the Frigidaire Div., General Motors Corp.  
The new cabinets can be used to store frozen foods or ice cream and can be operated at 35° to 40° for preserving dairy products and other perishable items.  
They are identical in basic design, construction, and appearance to Frigidaire standard ice cream cabinets except for lid and top arrangement, and size. Model ICGV-150 has a gross capacity of 15 cu. ft. and model ICGV-220 has a gross capacity of 22 cu. ft.  
The cabinets are all-steel construction and finished in white "Dulux" enamel. The sliding glass lid consists of two triple-thick glass Thermopane stainless steel frame assemblies.

Merchandising superstructures are available for both models. Each merchandiser has ample display shelf area and is equipped with lighted shadow-box picture frames.  
Exterior dimensions are: Model ICGV-150, 67 1/4 in. long by 30 1/2 in. wide and 32 1/2 in. high. Model ICGV-220, 92 1/4 in. long by 30 1/2 in. wide by 32 1/2 in. high, it was noted.

Beverage Cooler Holds 12 1/2 Bottle Cases



The model C4-15 features greater storage capacity than any other cooler with similar exterior dimensions, the company claims. It requires only 27 1/2 in. by 47 1/2 in. of floor space and is 39 1/2 in. high. Storage compartment is 19 1/2 in. deep.  
The C4-15 has baked enamel exterior, stainless steel sliding lids, Fiberglas and Temlock insulation, and adjustable temperature control.  
Accessories available include stainless interiors and exteriors, cold water equipment, fountains, casters, locking bars, plastic transparent lids, Formica service top sections, and adjustable wire separators for bin-type storage, it was stated.

Ceiling-Suspended Unit Cooler Offered

**KEY NO. F-752**  
ATLANTA —Larkin Coils, Inc. here has announced the MT-320 "Humi-Temp" unit cooler, a ceiling-suspended unit available for high temperature use.  
MT-320 has a capacity of 32,000 B.t.u./hr. with 10° TD, the company said.  
Case and drain pan are made of rustproof, heavy-gauge aluminum and painted blue. Coil surface consists of aluminum fins and staggered copper tubing.  
Mounting hangers are slotted to facilitate installation. Motors are provided with thermal overload protectors.

"Trouble-free performance of rugged Typhoon parts chalks up satisfied customers for me," says Sid Taylor (left), Typhoon's Des Moines dealer.



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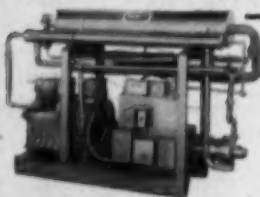
Famed INNER-FIN Construction  
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There's a Heat-X package chiller to meet your every requirement... residential, commercial, institutional or industrial. All feature space saving, extra efficiency Inner-Fin construction — exclusive with Heat-X. All have completely non-ferrous water passages to guard against corrosion.

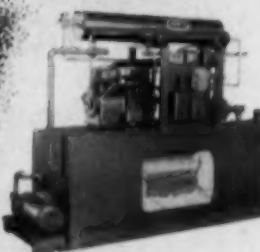
In any designated capacity, Heat-X package chillers are the most compact units made.

Capacity Control, available on 2 HP through 15 HP models for use with hermetic and semi-hermetic units, eliminates short-cycling during light load conditions and maintains constant suction pressure.



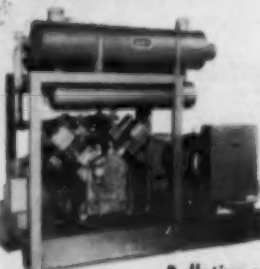
'PC' Package Chiller

For broad range of air conditioning, refrigeration and industrial liquid chilling applications. Models from 2 to 100 H.P.



'PCS' Chiller with Storage Tank

For cafeterias, hospitals, schools, theaters, etc. — wherever peak load conditions occur. Stainless steel storage tank with Fiberglas insulation. Range: 2 - 10 H.P. Storage capacity: 40-150 gal.



'RPC' Residential Package Chiller

For domestic applications. Available in 2, 3 and 5 H.P. models. Hermetic Compressors. 230/1/60.

'APC' Chiller

Air cooled units available in 2, 3 and 5 H.P. models. For residential and other applications where air cooled condensing is necessary.



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**Kelvinator Electronic Range Now In the Field**

—KEY NO. F-755—

DETROIT — Kelvinator introduced an electronic range during the Summer Furniture Market in Chicago.

The Kelvinator electronic range will be priced at \$1,195, including delivery, installation, and one-year warranty and instruction in its use. It will be available as either a stack-on unit in a polished chrome shell or as a built-in model.

Termed a "range" instead of an oven because it cooks 90% of foods cooked on surface units, the electronic range "opens up an entirely new cooking era," the company said.

"Cooking is done in minutes instead of hours. Foods can be cooked on serving dishes of fine china, paper plates, glass, and other non-metal utensils.

"Microwaves penetrate food up to a depth of 2½ in., causing agitation of molecules and friction to produce heat for cooking. They are carried forward from a magnetron through a wave guide and reflected downward into the range cavity. A stirrer, or four-blade fan, distributes the waves.

"Temperature is eliminated as a cooking factor and all cooking is determined by time. The microwave cooking control contains an automatic timer calibrated in seconds and minutes. When cooking is completed, a signal bell rings.

"Four knobs above the door control all functions of the elec-



tronic range. One knob turns on the main power, while another activates the magnetron for microwave cooking and automatically times the cooking operation.

"A 'Hi-Lo' selector permits an alternate speed for cooking such items as roasts. The fourth knob controls the browning element and is calibrated up to five minutes."

**Evaporative Unit Has Built-In Plenum**

—KEY NO. F-757—

COLUMBUS, Ohio — A built-in plenum to replace the plenum the dealer would have to build, has now been added to the Armstrong R3 upflow 2 and 3-ton evaporator cabinet, the Armstrong Furnace Co. has announced.

This evaporator unit is used with an air-cooled condenser and is usually installed on a basement model or highboy furnace, the company said.

The new cabinet design takes 7 in. off the height of the previous model R3 with plenum on top since a 12-in. high plenum can now be cut right into the side of the R3 cabinet, the manufacturer said.

The R3 is now 23 in. high as



compared to 30 in. in former cabinets with plenum.

Three knockouts are provided at the top of the R3 for 6-in. duct runs from the plenum chamber. An 18 by 12-in. plenum slot is outlined at the corners for the dealer's convenience, the company stated.

The cabinet is painted in French gray and with Armstrong blue in baked enamel.

**Portable Power Drive Offers 1-Man Operation**

—KEY NO. F-758—

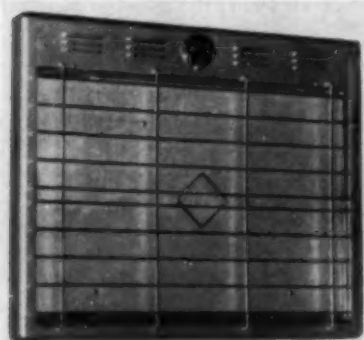
CLEVELAND — A one-man operated 80-lb. portable power drive for cutting, reaming, and threading pipe, known as No. 142 "Featherweight Champ," is now available from Oster Mfg. Co. here.

The unit converts regular hand die-stocks, cutters, and reamers to power tools and turns up fittings and takes them off, the company said. Produced in models equipped with interchangeable gasoline, electric, or air power



drives, the unit has an automatic clutch to allow power source to reach full operating speed before load is engaged, the manufacturer continued.

Designed to handle pipe ¼ to 2 in. in diameter, a handwheel operates the jaws of "wrenchless" chuck when the unit is setup on its aluminum alloy frame and folding tripod, it was further added.

**Radiant Heater Has Thermostat, Pilot Light**

—KEY NO. F-756—

NEWARK, N. J. — Marvray, Inc. recently offered a new radiant electric heater which incorporates a thermostat and pilot light which glows whenever the unit is on.

Completely wired, the new unit needs only to be connected to the supply circuit, according to the firm. Thermostat is double pole, single throw temperature controller, automatically cutting off current when room temperature reaches thermostat setting. The unit is UL approved.

Heating element is sealed inside a metal panel, front surface of which is anodized aluminum, it was explained. The line includes recessed and surface mounted models, rated at 1,250 and 750 w. for operation on 115, 208, 230, or 245 v. a.c.

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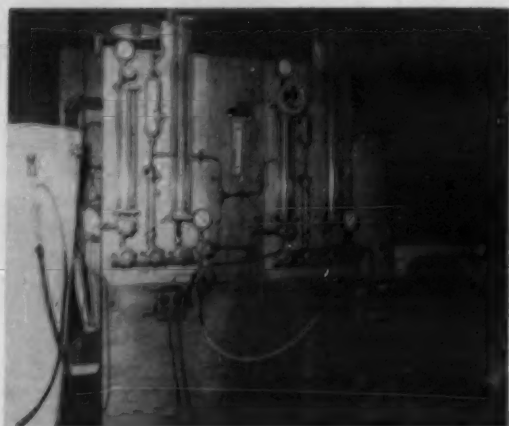
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## 'Run-In Boxes' Keep Evaporators from Room Temperature In Defrost Cycle Test; Can Handle 4 Refrigerators at Once



BOTH sides of this charging-evacuating panel are built in duplicate to handle four jobs at once at City Refrigeration Co.

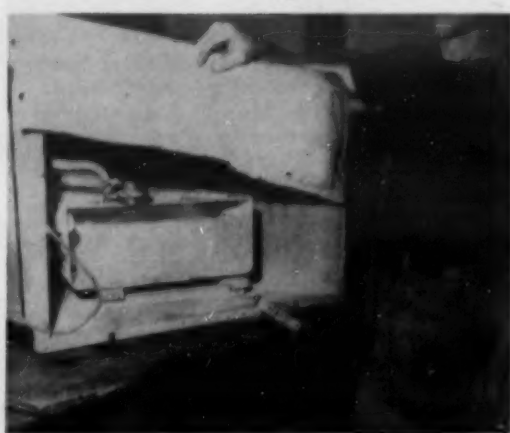


SHOWN with canvas-covered galvanized metal boxes is Bill Rueff. He tests package cooler coil units over an eight-hour period on the defrost cycle in these boxes.

ST. LOUIS—A bit of ingenuity in the form of canvas-covered "run-in boxes" combined with a huge charging board permit City Refrigeration Co. here, to recharge and test four refrigerators at once.

Experimenting with various "short-cuts" toward better charging and testing, William Rueff, shop manager, found that the evaporator on the average refrigerator could be tested more economically and accurately if they were kept away from room temperature during an eight-hour test on defrost.

Experimenting, he built a 44 in. in length, 24 in. deep, number of small boxes in and 20 in. long, these are galvanized metal boxes, opened at which the coil was placed during the test run. Measuring one side, insulated with 1 in.



LIFTING the canvas, Bill Rueff gives a peek at the evaporator inside the box.

of celotex on the surfaces. Over the repair box, and snapping across the open front is a heavy canvas curtain insulated with an inch of kapok insulation to effectively eliminate outside temperature.

Another unusual application of canvas which the service firm has developed is a "tent" which fits down over the rolling tables on which each refrigeration unit is placed for repair operations.

When evacuating gas from a refrigerator, he simply connects the evacuation system and then drops the canvas cover over the table which forms, in effect, a

tightly sealed tank.

On the lower shelf of the tables is placed a small electric heater, which brings the temperature within the tent up sharply, and provides for quick drying heat and evaporation at the same time. When the unit has been dried and all "Freon" refrigerant removed, the tent is simply cleared away.

A new service panel has doubled the capacity when charging. This is located in the

center of the shop.

The panel is built "in duplicate" with charging units for "Freon-12" and "Freon-22" at opposite ends on either side. Below is the vacuum system and associated evacuating units.

A "Freon-12" tank is located on one side, a "Freon-22" tank on the other side, with a 60-gal. oil tank in the center.

Using both sides at once, the shop can handle evacuating or charging jobs simultaneously.

## New RUBATEX CLOSED CELLULAR RUBBER TUBING STOPS COLD LINE CONDENSATION EASIER, QUICKER, SURER!



Here's the newest tubing insulation specially developed by Rubatex (pioneer manufacturer of closed cellular rubber) to positively stop condensation on copper formed cold lines.

It is a "slip-on" tubing with a nitrogen-filled closed cellular structure which cannot absorb moisture even at cut edges. Extremely flexible — readily slips on cold carriers — bends without cutting or fitting — fits snugly to any contour of pipes. For

application on installed pipes, can be slit lengthwise, snapped around piping and sealed with special adhesive.

Fire-safe, Rubatex Tubing has good thermal insulation properties — a low K-factor of .28 at 75° F. which remains constant as Rubatex will not deteriorate in service.

Manufactured with minimum inside diameter of 3/8". Produced in lengths up to 250 feet.

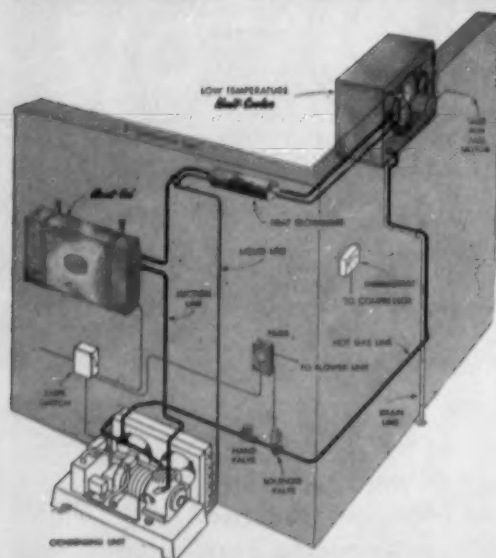
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Bedford, Virginia

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Stone and Webster Securities Corporation		A. C. Allyn and Company Incorporated
American Securities Corporation	Central Republic Company (Incorporated)	Estabrook & Co.
Hallgarten & Co.	F. S. Moseley & Co.	Paine, Webber, Jackson & Curtis
Reynolds & Co., Inc.	Shields & Company	Bacon, Whipple & Co.
Equitable Securities Corporation	Loewi & Co. Incorporated	The Milwaukee Company
	Shearson, Hammill & Co.	

July 18, 1956



### Niagara Illustrates Liquid Cooling Unit

—KEY NO. R-750—

NEW YORK CITY—Niagara Blower Co. Bulletin 132, Sectional Aero Heat Exchanger, illustrates and explains the functions of new equipment to provide cooling of liquids in industrial plants independent of a large supply of cooling water and with savings of installation and operation.

### Brochure Released on 'Scotsman Super Cuber'

—KEY NO. R-751—

ALBERT LEA, Minn.—The complete new "Scotsman Super Cuber" line of automatic ice machines is featured in a six-page brochure, published by the American Gas Machine Co., division of Queen Stove Works, Inc.

Mechanical and performance features of the Scotsman machines are fully explained and illustrated.

### M-H Publishes Book on 'Air Conditioning Controls'

—KEY NO. R-752—

MINNEAPOLIS—Information on equipment, installation, and automatic controls accumulated during the "growth" years of residential air conditioning is presented in a new book, "Fundamentals of Air Conditioning Controls," published by Minneapolis-Honeywell Regulator Co.

The company said the new handbook—first of its kind in the industry—fills a need that has developed due to the relative newness of air conditioning and the absence of standardization of equipment, practices, and concepts. It will be made available at a

price of 50 cents a copy to air conditioning equipment manufacturers, distributors, dealers, and installers as part of the firm's program of training and education to the industry, according to Dick Locke, Honeywell's air conditioning controls manager.

"The book covers the field of air conditioning from basic refrigeration to today's advanced concepts and equipment for residential cooling. It includes complete sections on applications and distribution practices," he said.

### Tuttle Catalogs Product Line

—KEY NO. R-753—

ADRIAN, Mich.—H. W. Tuttle & Co. here recently issued No. 56 catalog carrying new prices on toaster, percolator, stove brick, flat iron, cone, clothes dryer, and electric ironer elements, metal replacement spools and replacement coils.

The six-page folder illustrates and gives specifications for units manufactured by Tuttle.

### Industrial Electric Heating Units Covered

—KEY NO. R-754—

PITTSBURGH—A revised catalog (27-620) that describes industrial electrical heating units and devices is available from Westinghouse Electric Co.

The catalog contains information and design selection charts on strip heaters, natural and forced convection air heaters, oven heaters, immersion heaters, cartridge heaters, melting pots, industrial hot plates, and heater control equipment. Information about selection of many special types is also included.

### Sequoia Illustrates Remote Conditioners

—KEY NO. R-755—

SAN CARLOS, Calif.—Remote air conditioners for installation in combination with central forced air heating systems are described and illustrated in a pair of new specification sheets issued by Sequoia Mfg. Co.

Presently available in Sequoia's new air-cooled Series ACR are 2, 3, and 5-ton models. Spec sheets give detailed dimensional and operating data.

### Copeland Specifications Given on 3 New Units

—KEY NO. R-756—

SIDNEY, Ohio—Three pieces of new literature describing two "Copelametic" motor-compressors and a new condensing unit for air conditioning or other high temperature applications have been made available by Copeland Refrigeration Corp.

Two of the pieces provide all specifications and performance data for new 3-hp. and 10-hp. heat.

"F-22," suction-gas cooled motor-compressors, especially applicable for packaged air conditioners.

A third piece describes completely the 10-hp. "F-22" remote Copelametic condensing unit. The motor-compressor is suction-gas cooled. The multi-pass, water-cooled shell-and-tube condenser may be incorporated in a direct city water or cooling tower application.

### Phillips Describes Soldering Equipment

—KEY NO. R-757—

MINNEAPOLIS—Phillips Mfg. Co., Inc., maker of soldering equipment here, recently issued five illustrated literature sheets on its line.

Three of the sheets present heavy-duty models 250 and 500 "Versa-Tool," and the SF-100 "Flash." The other illustrate the lightweight "quick" heating models 75 and 300, the firm said. The set features such things as rigid tubular barrel, non-freezing tips, and four to six-second operating heat.

### Markem Offers Data For Service Firms

—KEY NO. R-758—

NEW YORK CITY—A paper control procedure for the service industry, now used by appliance organizations, is illustrated and described in a pictorial brochure published here recently by Markem Service Systems.

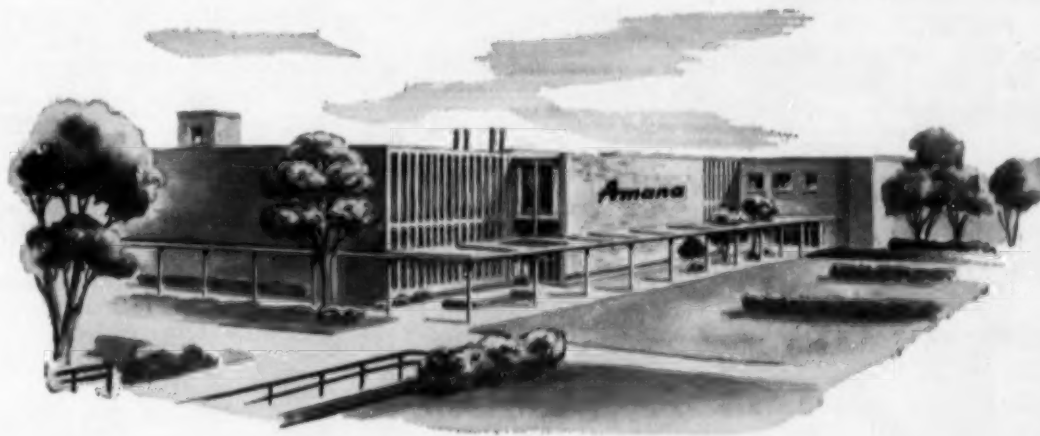
The four-page publication shows a comparative study on paper control of a large firm before and after installation of this system, the company said.

### 'Quick-Bilt' Shelving Detailed In Folder

—KEY NO. R-759—

WELLSTON, Ohio—"Do-It-Yourself" shelving is the subject of a six-page, two-color folder recently released by Frick-Gallagher Mfg. Co. here.

A new type of "Quick-Bilt" shelving, basic units, shelves, dividers, and accessories, is illustrated and fully described. A number of standard arrangements are also shown.



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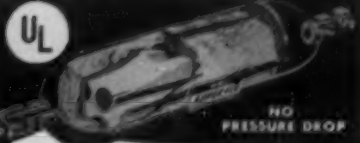
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## Refrigeration Problems And Their Solution

By Paul Reed

For Service and Installation Engineers



## Comparison of Refrigerants 12 & 22

(Continued)

### MOISTURE IN 12 AND 22 VAPOR

There is still another angle to the water solubility of 12 and 22. We have lightly covered the solubility in the liquid phase; now how about the vapor phase?

In this the situation is reversed. Whereas 22 can hold far more moisture than 12 in the liquid phase, 22 can hold somewhat less than 12 in the vapor phase. Moreover, and this is of more practical significance; whereas 12 as a liquid can hold less moisture than 22 as a vapor, the reverse is true of 22,

Table 13—Comparison of  
Water Solubilities of 12 and  
22 In the Vapor Phase

Saturation Temperatures °F.	12	22	Ratio 22/12
Vapor			
-40	29.1	24.4	.84
-20	58.1	48.9	.84
0	110.4	92.7	.84
20	197.5	165.7	.84
40	323.2	268.4	.83

which can hold more moisture as a liquid than as a vapor. For both 12 and 22, we are referring, of course, to the same weight of refrigerant and at the same temperature.

This means that, for example, if we gas off 12 from a cylinder at 90°, with the liquid having 10 ppm, the vapor will hold 6.1 times as much moisture as the liquid, or 61 ppm. This is a good way to dry the liquid, but it puts very wet 12 into a system. The reverse is true of 22 at 90° and 10 ppm liquid. The vapor will have a ppm of only .397 of the 10 ppm liquid, or a moisture content of 3.97 ppm. On gassing off 22 we will get drier gas than liquid, but the liquid left will increase in moisture content as it loses vapor, that is, it will become wetter.

Therefore, if we charge 12 into a system in vapor form, we should do so through an ample size drier. This is not necessary with 22.

### THERMAL CONDUCTIVITY OF 12 AND 22

Since the intent of this series of articles has been to gather into one paper a brief discussion of all of the main points to be considered in comparing 12 and 22, the relative ability of these two refrigerants to transmit heat should at least be mentioned, although this factor has little significance to the man in the field.

There are two chief places at which external heat enters or leaves the refrigerant—the evaporator and the condenser. There are other places where this occurs, but the addition or

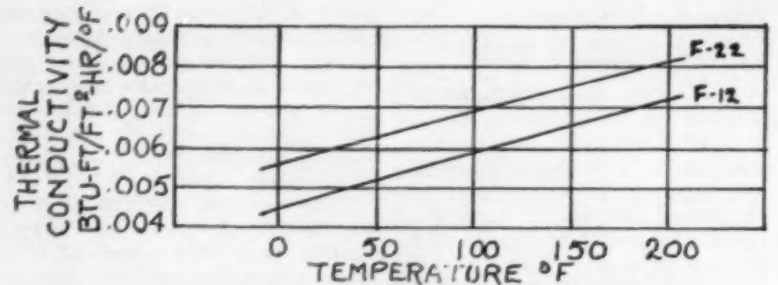


FIG. 1—Thermal conductivity of 12 and 22 vapor.

loss of heat at such points is incidental to the main purpose and operation of the system.

At the evaporator, heat from the food is carried by the air to the evaporator. The rate at which this heat gets to the refrigerant, so that it can be carried out of the refrigerated space and to the compressor, depends on many things: the difference in temperature between the air and the refrigerant, the area of the evaporator exposed to the air and that exposed to the refrigerant, the velocity, and turbulence of the air over the evaporator, the material of which the evaporator is made.

It also depends on how much of the evaporator is prime surface (tubes containing refrigerant) and how much is extended surface (fins), the fin spacing, fin shape, how good a contact there is between the fin and the tube, the nature of the surface, whether it is wet or dry, the thickness of the tube, the nature of the inner surface of the tube, the velocity and turbulence of the refrigerant in the tube, how much of the inner surface is exposed to liquid refrigerant and how much is exposed to refrigerant vapor, the amount of oil in the refrigerant, and finally the ability of the refrigerant itself to transmit the heat.

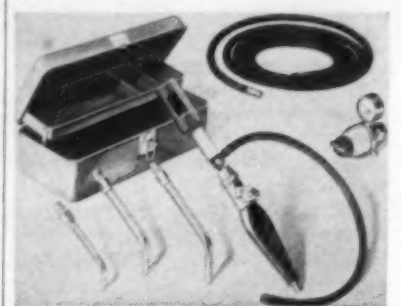
This latter is generally referred to as the thermal conductivity of the refrigerant, and its value depends mainly upon the refrigerant temperature and whether the refrigerant is in a liquid or vapor state.

Fig. 1 shows thermal conductivity curves for "Freon-12" and "Freon-22" in vapor form and Fig. 2 in liquid form. These curves were drawn from data taken from the paper "Thermal Conductances and Heat Transmission Coefficients of 'Freon' Refrigerants" by Markwood and Benning of the Kinetic Chemicals Div. of du Pont and apply directly to their product, but presumably would be true for other brands of Refrigerants 12 and 22.

### 22 SUPERIOR TO 12 IN THERMAL CONDUCTIVITY

These curves show that 22 is much superior to 12 in thermal conductivity in both the vapor and liquid states. In practice, this means that an evaporator or condenser could be more efficient.

(Concluded on next page)



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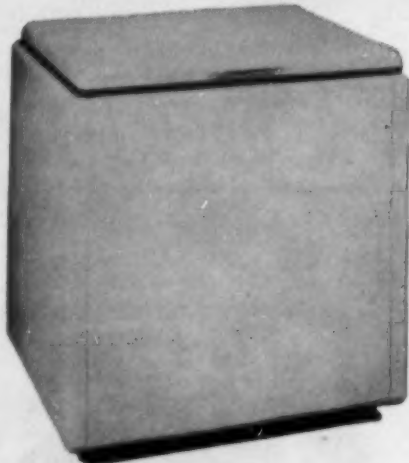
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Very attractive conditions for approximate 6-month contract.

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## Refrigerants --

(Concluded from preceding page) cient if designed for 22 than one designed for 12; but in designing an evaporator or condenser to take advantage of the higher thermal conductivity of 22 over 12, many other factors would have to be considered, not the least of which would be the transfer of the heat from the air to the evaporator, or from the condenser to the air or water.

Any increase of heat transfer between the refrigerant and the evaporator or condenser would have to be compensated for by also increasing the heat transfer between the evaporator or condenser and the air or water.

Problems of heat transfer are far from simple; in fact, they become quite complicated. Generalizations and hasty conclusions can lead one far astray.

Not long ago, the author was told by a manufacturer who was considering changing from 12 to 22, "We can save a lot on the evaporator too, but using 22. It has a thermal conductivity about 16% higher than 12, so we can use an evaporator about one sixth smaller than we now use with 12."

To anyone interesting in pursuing the subject of the thermal conductivities of these two refrigerants we suggest the Markwood and Benning paper.

### SUMMARY

We shall not attempt to summarize all of the points brought out in this series, except to offer the observation that 22 is being used in some applications for which 12 would be far superior, and to emphasize that the four main reasons for using 22 instead of 12 are:

1. To permit operation at suction pressures above atmospheric, on systems having evaporators between -41.4° and -21.6°.
2. To reduce the physical size and cost of the compressor.
3. To reduce the size and cost of refrigerant lines.
4. To take advantage of the better thermal conductivity of 22.

In some other respects, such as horsepower per ton, compression ratio, flammability, toxicity, and critical temperatures and

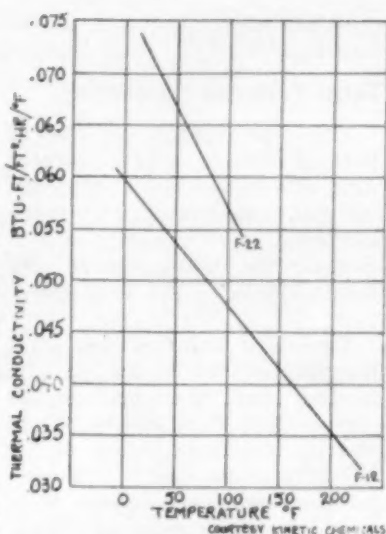


FIG. 2—Thermal conductivity of 12 and 22 liquids.

pressures, the differences between 12 and 22 are so small as to have little bearing.

In some other characteristics, particularly discharge tempera-

tures, head pressures, oil solubility, water solubility, leak tendency, and its chemical reactions, 22 has given us problems that are more acute than with 12. Some of them we have about solved, others are still not under control.

Nevertheless, if we dry 22 systems down to the same ppm as we now have to dry 12 systems, even though it is far more difficult, quit using freeze-ups at the expansion valve or capillary tube as a guide as to when the system is dry enough, and avoid high condensing temperatures and pressures, particularly on low temperature applications, we will overcome a very large part of our problems with 22.

In preparing the preceding series of articles on 12 and 22, the author has drawn heavily on the great mass of data on 'Freon' refrigerants compiled by Kinetic Chemicals. He also wishes to express his indebtedness to the

published papers and private communications of Dr. Walter O. Walker, Dean, Division of Research and Industry, University of Miami; Dr. Howard M. Elsey, Chemical Consultant; Dr. B. J. Eiseman, Kinetic Chemicals; Dr. Heinz Steinle, Robert Bosch Co.; John H. Spence, Hussmann Refrigeration; John Bopp, Ansul Chemical Co.; and to his many other friends in the industry who have contributed their experiences.

In attempting to cover such a broad subject, it has been necessary to generalize, and over-simplify in some instances. The author believes the information is essentially correct.

(There have been requests for reprints of this series "Comparisons of Refrigerants 12 and 22." AIR CONDITIONING & REFRIGERATION NEWS is preparing to furnish these in folder form. Watch for an announcement in a future issue.)

## Hussmann Strike Cuts Shipments, Profits

ST. LOUIS — Shipments and profits of Hussmann Refrigerator Co. in the first half of this year were adversely affected by a 22-day strike, W. B. McMillan, president, reported recently.

Net sales of the company and wholly-owned subsidiaries in the period totaled \$15,019,314, compared with \$15,458,495 in the first six months of 1955. Net profit amounted to \$1,209,595, equal to \$1.92 per common share, against \$1,340,533, or \$2.14 per common share, in the first 1955 half.

McMillan said orders received during the first six months of 1955 "were in excess of the corresponding period last year, and a continuation of the good demand for our products during the last half of the year appears probable."



## Chicago serviceman makes more calls per day, fewer call-backs using Ansul Refrigeration Oil

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## Servicing Weathertron Heat Pumps (4)

Originally just a theory and for many years subject only to occasional experimental installations, the heat pump of late has developed into a practical and expanding business.

It's future was never brighter.

Design, manufacturing, sale, installation, and service of the heat pump have already become important factors in the air conditioning industry, and are bound to grow.

In recognition of the present stage of development, and the expected future, the NEWS is presenting herewith a series of articles on servicing a specific make of heat pump—the General Electric air-to-air "Weathertron."

This instalment continues the discussion of How the Weathertron heat pump works.

### Switchover

Switchover from heating to cooling and vice versa is instantaneous. The one thing that should be remembered is this—if the switchover valve solenoid SC is energized the Weathertron

can only be on cooling—if SC is de-energized the Weathertron can only be on heating.

### Heating Cycle

Assume the thermostat has been satisfied and the Weathertron is not running. If the in-

door temperature drops to the thermostat setting the first stage heating contacts TSM<sub>1</sub> of the thermostat will close and power will be supplied to the heating relay coil H.

When H is energized, contacts H<sub>1</sub>, H<sub>2</sub>, and H<sub>3</sub> all change position. H<sub>1</sub> and H<sub>2</sub> have no effect since W<sub>1</sub> and TCCO are both open. However, when H<sub>2</sub> changes its position a circuit is completed to the motor starter coil MS, through the overloads (OL) and the hi-low pressure cutout HLCO.

When MS is energized all the MS contacts close and power is supplied to the compressor motor and the outdoor and indoor fan motors.

The Weathertron now starts on heating. Power is also supplied to the override solenoid OR, through the H<sub>2</sub> contacts, the override control switch ORCS opening the OR valve. This valve is always in the open

position when the unit is on heating.

### Third Cylinder Operation

The compressor of the C Model Weathertron operates with two cylinders during cooling and some heating. To make available more capacity at low outdoor air temperatures, the third cylinder is put into operation.

The third cylinder will start pumping if while the unit is heating and the outdoor air temperature falls below 27° F. The third cylinder cutout switch (TCCO) closes below this temperature and energizes the third cylinder loading solenoid (TCL).

The TCL when energized, exposes compressor discharge pressure to the third cylinder causing the compressor to operate on three cylinders. When the outdoor air temperature rises above 30° F., the TCCO open, de-energizing the TCL,

exposing suction pressure to the third cylinder, so the compressor operates again on two cylinders.

### Supplementary Heaters

With the unit running on heating cycle during colder days, it may be necessary to supplement its capacity with some supplementary heat. If the indoor temperature drops 1¼° F. below the thermostat setting the second stage heating contacts TSH<sub>2</sub> of the thermostat close and a circuit is completed to the operating relay coil W.

When W is energized, contacts W<sub>1</sub> and W<sub>2</sub> both close. W<sub>2</sub> has no effect since power is already supplied to MS through heating contact H<sub>2</sub>. However, when W<sub>1</sub> closes, a path is completed to outdoor thermostats ODT-I and ODT-II through heating contact H<sub>1</sub>.

If the outdoor temperature falls below 43° F. ODT-I closes and supplementary heat contactor AH is energized, turning on the first stage of supplementary heat. If the outdoor temperature falls below 20° F., ODT-II also closes energizing BH thereby turning on the second stage of supplementary heat as well as the first.

The supplementary heaters are locked out by outdoor thermostats at outdoor temperatures above 43° F. to prevent the supplementary heaters from coming on when someone turns up the room thermostat in mild weather.

### Defrost

The defrost electrical operation is as follows:

1. When static pressure across the outdoor coil builds up to a predetermined value, the defrost sensing switch contacts SP close supplying power to the time delay coil TD.

2. If SP stays closed for approximately 20 seconds, the TD contact closes supplying power to the defrost relay D.

3. Upon energizing the defrost relay D all its contacts change position.

(Continued on next page)



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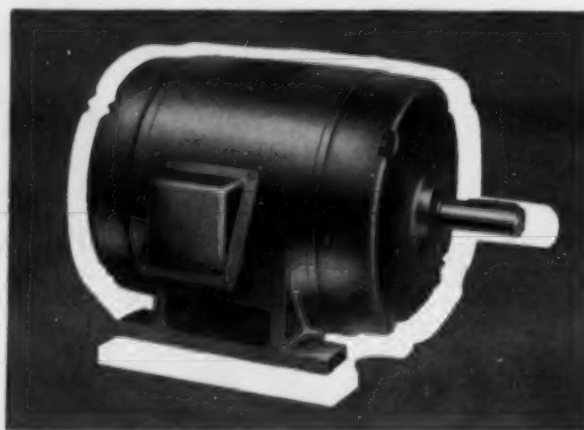
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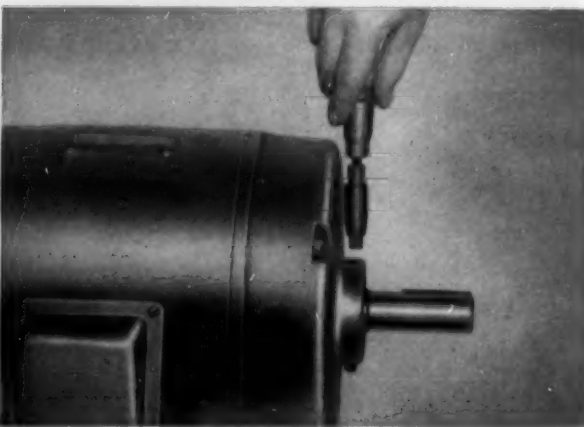
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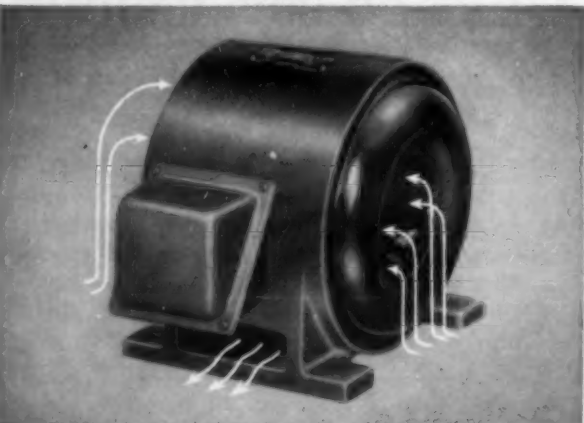
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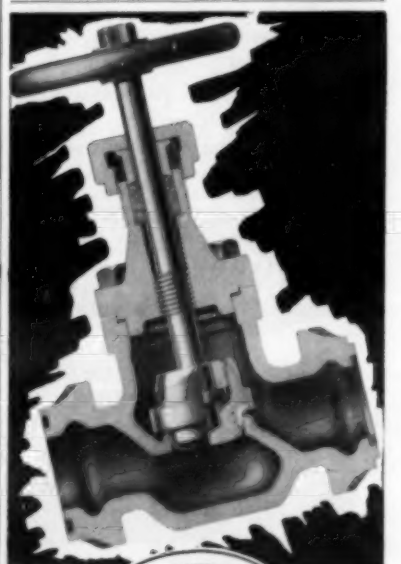


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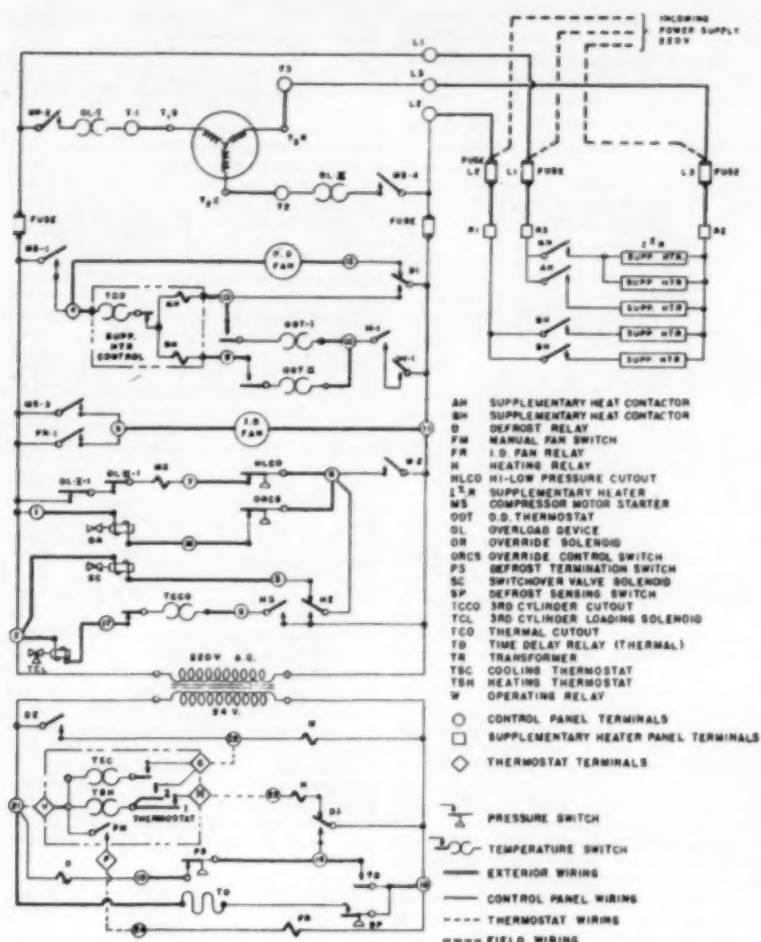


FIG. 4 is wiring diagram of G-E Weathertron designed for 220-volt single-phase current.

## Heat Pump--

(Continued from preceding page)

4. Contact D<sub>3</sub> changes position, de-energizing the heating relay H, stopping the unit. When it makes on the other side it locks in defrost relay D.
5. Contact D<sub>2</sub> closes by-passing the Weathertron thermostat energizing the operating relay W thereby reversing the refrigerant cycle to cooling.
6. Contact D<sub>1</sub> changes position stopping the outdoor fan by removing it from the circuit, then energizing the supplementary heat relay (AH).
7. After the ice has melted the pressure in the outdoor coil builds up and the defrost termination switch (PS) opens and de-energizes relay (D).
8. The contacts D<sub>1</sub>, D<sub>2</sub>, and D<sub>3</sub> return to their normal posi-

tions and control is returned to the Weathertron thermostat, which starts the heating cycle.

### Capacitor Start (Single Phase Only)

Single phase WT44C1 and WT66C1 models have both start and run capacitors (Fig. 4). When the Weathertron thermostat calls for any cycle the motor starter contacts MS<sub>1</sub> and MS<sub>2</sub> close supplying power to the start, run motor winding.

As the motor comes up to speed the capacitor switching relay CSR is energized and the CSR contacts (normally closed) open removing the start capacitors from the circuit.

### Manual Fan Switch

If ventilation air is desired when the unit is not operating, this air may be obtained by turning the fan switch (FM) on the thermostat to the ON position. Closing FM completes a path to the fan relay coil FR.

When FR is energized, relay contacts FR-1 close supplying power to the ID fan which provides ventilation air to the conditioned space, regardless of whether or not the unit is operating. If the fan switch is turned to the AUTO position, the ID fan will run only when the unit is operating.

(To Be Continued)

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## Frozen Foods--

(Concluded from Page 1, Col. 3)  
eggs, and milk in the form of gravies, custards or pre-cooked foods, he added.

From a 1956 survey of super-market refrigeration facilities, Prof. Proctor cites examples to show what frozen foods may sometimes go through before they reach the customer.

Instances were found where frozen food orders were assembled in rooms with temperatures as high as 37 to 44°. Some distributors shipped frozen packages in trucks in which temperatures were as high as 14°. It was explained that 15° and above is the danger point and anything above zero is undesirable.

Some trucks were loaded in the evening and left all night with no refrigeration other than that provided by the frozen food packages themselves, the survey showed. Some market back-room storage was found to be operating at as high as 39°. In retail selling some cabinet temperatures ran as high as 28°.

These facts are not presented "to give the impression all frozen foods are carelessly handled and abused, because this is certainly not so," he continued.

The frozen food industry, on the outlook for ways to improve quality of what it offers to consumers, would like to find a device for the outside of a frozen food package that will tell the customer whether its contents had ever been allowed to thaw, the professor reported.

About all the consumer has to rely on now is the "squeeze" test. When Mrs. Jones squeezes the frozen package and finds it squashy, she knows it is no good.

But what Mrs. Jones can't tell now is whether the package she does pick has ever been thawed and refrozen—a potentially dangerous practice.

Best scheme yet devised, according to Prof. Proctor, is to put a thin, distinctively-shaped marker of ice in a plastic bag inside each food package. If the reaches temperatures high enough to affect the taste or freshness of the food, the tiny piece of ice will betray it by melting. Even if refrozen, the ice won't regain its form.

## August Weather--

(Concluded from Page 1, Col. 2)  
long range forecasts.

Following is a regional breakdown for August:

### Northeast:

Temperatures will average near normal in Maine and Eastern Canada, somewhat hotter than usual in most inland stations. Last August, conditions were much hotter than normal.

### Great Lakes-Midwest:

Another hot August is forecast for this region but conditions will be "less hot" than last August. Rainfall will be generally less than normal but humidity readings should still range in the uncomfortable zone.

### Southeast:

Temperatures will average near normal along the coastline and hotter than usual at inland stations. Heavy rains are anticipated along the Gulf Coast and in the Cape Hatteras-Norfolk area.

### North Central:

Temperatures will be hotter than usual and as hot as last August throughout most of the

region. Near-record hot weather is due on three or four days.

### South Central:

Tropical off-shore storms will produce heavy rains in Louisiana, East Texas, and southern sections of Arkansas and Oklahoma. West Texas will continue to be dry. The "wet" areas will average a shade cooler than normal while the predicted "dry" areas will be hotter than usual. All in all, another good air-cooling month is forecast.

Temperatures will average cooler than normal along the Pacific Ocean and slightly warmer than normal along the western slopes of the Rockies.

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AIR CONDITIONING & REFRIGERATION NEWS

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The following articles have appeared recently in Air Conditioning & Refrigeration News, and are now available in reprint form. Supply of some reprints is limited. The order coupon below can also be used to obtain "selected" reprints not listed by giving title, page, and issue date.

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| 10) Chilled Water Central Air Conditioning Installed for \$1,000-\$1,400; Utilizes Wet Heating System, Needs No Duct    | 22) Residential Air Conditioning in Cincinnati, 1954                          |
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| 12) Survey Shows Equipment in Food Stores   | 24) New Wichita Survey Shows Residential Air Conditioning Soars               |
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| 15) Air Conditioning, Commercial Refrigeration Shipments 1949-1953 from Figures Collected by U. S. Bureau of the Census | 27) What's the Market for Systems 100 Tons and Up?                            |
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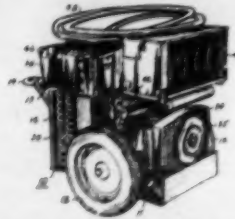
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# PATENTS

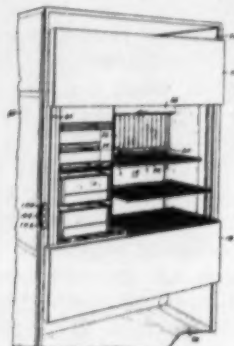
## Week of March 13

**2,737,780. REFRIGERATING APPARATUS.** Randal Currell, Jr., Cincinnati, Ohio, assignor to Keco Industries, Inc., Cincinnati, Ohio, a corporation of Ohio. Application March 8, 1953, Serial No. 275,629. 11 Claims. (Cl. 62-4.)



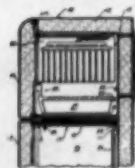
3. In a portable self-contained refrigeration unit, a chassis, an engine mounted on said chassis, a compressor mounted on said chassis, power transmitting means between said engine and said compressor, a condenser mounted on said chassis, an evaporator, refrigerant flow connections between said evaporator, condenser and compressor, a vertically extending swivel rod carried by said chassis, a towbar secured to said swivel rod, and means for selectively holding said towbar in a projected position in front of said chassis or for holding said towbar in a folded position adjacent one side of said chassis.

**2,737,781. REFRIGERATING APPARATUS WITH VERTICALLY SLIDABLE DOOR MEANS.** Louis Gelfand, Detroit, Mich., and Verlos G. Sharpe, Dayton, Ohio, assignors to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Jan. 12, 1954, Serial No. 404,563. 10 Claims. (Cl. 62-89.)



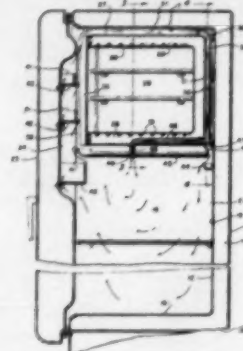
1. In a refrigerator, a cabinet having a food storage compartment provided with an access opening, a door jamb at said opening, a refrigerating system including an evaporator arranged in thermal exchange relationship with said food storage compartment, slidable door means for said opening, said slidable door means comprising a pair of vertically slidable sections movable toward and away from one another, and means for camming said doors against the said jamb in response to movement of said doors to closed position.

**2,737,782. PLURAL COMPARTMENT REFRIGERATOR.** John P. Antico, Philadelphia, Pa., assignor to Philco Corp., Philadelphia, Pa., a corporation of Pennsylvania. Application Jan. 6, 1953, Serial No. 329,863. 2 Claims. (Cl. 62-103.)



1. In refrigerator construction, a cabinet, a low temperature compartment within the upper portion of said cabinet, said low temperature compartment including evaporator means extending generally horizontally between walls of said cabinet, an intermediate compartment disposed beneath said low temperature compartment, said evaporator means normally forming the upper wall of said intermediate compartment, and a bottom compartment separated from said intermediate compartment by insulating partition means spanning the width and depth of said cabinet, each of said compartments being accessible through wall portions of said cabinet, said partition means including a pair of members of low thermal conductivity and said partition means forming the top wall of said bottom compartment, one of said members being mounted for movement from a normal position adjacent the other member to a position adjacent said evaporator means, in which latter position it forms the top wall of said intermediate compartment, whereby said one member provides means for adjusting the temperature of said intermediate compartment without changing the thermal impedance between said low temperature compartment and said bottom compartment.

**2,737,783. REFRIGERATING APPARATUS HAVING AIR CIRCULATING MEANS.** Leonard J. Mann, Dayton, Ohio, assignor to General Motors Corp., Detroit, Mich., a corporation of Delaware. Application Feb. 25, 1953, Serial No. 338,641. 3 Claims. (Cl. 62-103.)



1. A refrigerator comprising in combination, a cabinet provided with an unfrozen food storage chamber therein having a top, bottom, back and side walls, an access opening in the front of said cabinet for said chamber, a door normally closing said chamber access opening, a structure in the upper part of said food chamber including inner and outer walls having insulating material therebetween, said insulated structure having a width substantially equal to the width of said chamber, the inner wall of said insulated structure forming a frozen food storage compartment, said compartment having an access opening facing the food chamber door, a door normally closing said frozen food storage

compartment access opening, refrigerating means associated with said cabinet including a freezing evaporator for cooling said frozen food storage compartment and a higher temperature evaporator for said unfrozen food storage chamber, said doors being spaced from one another to provide a first flue therebetween, the outer wall of said insulated structure being spaced from the top and back walls of said food chamber to provide a second flue above said structure and a third flue at the rear thereof respectively, said flues being in open communication with one another and with said unfrozen food storage chamber below said insulated structure, said higher temperature evaporator of said refrigerating means being disposed in the flue at the rear of said insulated structure and concealed from view thereby when said food chamber door is opened, a plurality of shelves mounted on said food chamber door, at least one of said shelves being disposed in said first flue and having portions thereof spaced from the inner face of said food chamber door, said higher temperature evaporator cooling and causing air to circulate downwardly out of said third flue into said chamber forwardly and upwardly therein into said first flue and through the space between said one shelf and the inner face of said chamber door thence through said second flue, conduit means projecting into said third flue for scooping some of the air circulating downwardly therein laterally therefrom, and said conduit scooping means having an outlet disposed at a point intermediate said first and said third flues for discharging the scooped air downwardly into said unfrozen food storage chamber.

(Continued on next page)

# Government Contracts

## SYNOPSIS OF PROPOSED PROCUREMENT

### ARMY

Sunny Point Army Terminal, Southport, N. C. INSTALLATION OF 8,500 SQ. FT. of air conditioning—Job—IFB TC-31-126-57-33—Bid Opening 30 July 56.

Corps of Engineers, Tullahoma District, P. O. Box 2091, Tullahoma, Tenn. DESIGNING AND FURNISHING MISCELLANEOUS VALVES FOR COMPRESSOR SYSTEMS of the Gas Dynamics Facility, consisting of: relief valves, 4.285 p.s.i.g., 2 ea.; globe valves, 3 in., 4.300 p.s.i.g., 2 ea.; globe valve, 4 in., 4.400 p.s.i.g., 1 ea.; check valve, 16 in., 125 lb. series, 1 ea.; check valves, 3 in., 4.300 p.s.i.g., 2 ea.; stop valve, 2 in., 60 p.s.i.g., 1 ea.; butterfly valve, 16 in., 0.2 p.s.i.g., 1 ea.; butterfly valves, 8 in., 110 p.s.i.g., 2 ea.; pressure control valve, 24 in., 60 p.s.i.g., 1 ea.; pressure control valve, 4 in., 110 p.s.i.g., 1 ea.; pressure control valve, 4 in., 4.300 p.s.i.g., 1 ea.; and pressure control valve, 12 in., 2.0 p.s.i.g., 1 ea.; bid sets are available—Job—IFB ENG-40-126-57-4B—Bid Opening date 17 Aug. 56.

Contracting Officer, Fort Detrick, Frederick, Md. REHABILITATION OF REFRIGERATION SYSTEM, Bldg. 522, Fort Detrick, Frederick, Md., drawings and specs. are available—Job—IFB CML-18-064-57-13B—Bid Opening 21 Aug. 56.

### NAVY

General Stores Supply Office, 700 Robbins Ave., Philadelphia 11, Pa. The following item is procured under IFB 155-2186-56B—Bid Opening 7 Aug. 56. TUBING COPPER, Specification MIL-T-873(Ship) Amend. 1—13,200 ft.—IFB-155-12-57B—Bid Opening 6 Aug. 56.

General Stores Supply Office, 700 Robbins Ave., Philadelphia 11, Pa. RANGE, ELECTRIC, Spec. MIL-C-001218A (Ships) with GSSO Spec. exception 65-3—84 ea.—IFB-155-43-57B—Bid Opening 9 Aug. 56.

## CONTRACTS AWARDED THROUGH JULY 23, 1956

Schenectady General Depot, U. S. Army, Schenectady, N. Y. Refrigerator, Mechanical, commercial, 60 cu. ft. capacity, Pass-Thru Type Reach-In, with six (6) sliding type glass doors, three (3) at the front and three (3) at the rear of the refrigerator, with 1/4-hp. air-cooled, open-type, remote hermetic or semi-hermetic condensing unit designed for tropical service, VIMCO Model RS-50-R-PT-SGD Pass-Thru Type Reach-In Refrigerator with sliding glass doors as mfd. by Victory Metal Mfr. Corp., Stock No. 4110-289-4444, Contract No. DA-30-127-QM-817 (O.I. 7278-QOA-6) IFB QM-30-127-56-305—14 ea.—\$34,860—Leonard Haimos Co., Inc., 35 Mercer St., New York 13, N. Y.

Lordstown Military Reservation, Warren, Ohio. Relocating existing coal boiler and installing new high-pressure boiler. (RFP ORD-33-058-56-13)—Job—\$26,701—Buckeye Heating & Air Conditioning, 1117 W. Market St., Warren, Ohio.

Officer in Charge of Construction, District Public Works Office, Fifth Naval District, Naval Base, Norfolk 11, Va. Dehumidification System, Bldg. 137, Low Temp. Rm., Bldg. 137, and Air Supply, Bldg. 133, Marine Corps Air Station, Cherry Point, N. C. (IFB NBY-635)—Contract—\$73,800—King-Hunter, Inc., 1421 Westover Terrace, Greensboro, N. C.

Headquarters, Wright-Patterson AFB, Ohio. Air Conditioning system, second floor headhouse, hangars A, B, C, D & E, building No. 263, Area "A" (IFB 33-601-56-779)—Job—\$84,566—Hughes-Simonson, Inc., 20 North McGee St., Dayton, Ohio.

General Services Administration, Region 7, Business Service Center, Dallas, Tex. Air Conditioning Courtroom and Judges Chambers, Post Office and Court House, Galveston, Texas. (IFB CR7564-400)—Job—\$15,724—Refrigeration Service Co., 412 York St., Houston, Texas.

Air Conditioning X-Ray Department and Physical Therapy, U. S. Public Health Service Hospital, Galveston, Texas. (IFB CR7563-308-R)—Job—\$17,800—Stahl & Myers Air Cond. Co., Inc., 2301 Dumble Rd., Houston, Texas.

OIC of Construction, Bureau of Yards and Docks, 4th Naval District, U. S. Naval Base, Philadelphia 12, Pa. Installation of Air Conditioning, Office of Inspector of Naval Material, Reading, Pa. (IFB NBY-4788)—Job—\$18,420—Wertz Engineering Co., 441 N. Second St., Reading, Pa.

Alterations to and Air Conditioning of Fifth Floor, Building B-I for IBM Section, Marine Corps Clothing Depot, Philadelphia, Pa. (IFB NBY-4734)—Job—\$101,721—Pennsylvania Air Conditioning Co., Parkside and Belmont Aves., Philadelphia 4, Pa.

United States Property & Fiscal Officer for Texas, P. O. Box 5218, West Austin Station, Austin 31, Texas. Construction and Installation of a 15-ton Summer-Winter Air Conditioning System in Bldg. No. 48, Camp Mabry, Austin, Texas, Contract No. DA-41-292-NG-439 (IFB NG-41-292-56-28B)—Job—\$10,588—Young & Pratt, 1815 South Lamar, Austin, Texas.

Supply Officer, U. S. Naval Gun Factory, Washington, D. C. Air Conditioning Units, 1/2 ton and 1 ton—175 ea.—N171-10756A (Neg 4100-0224)—\$36,840—Southern Wholesalers, Inc., 707 Edgewood St., N.E., Washington, D. C.

Headquarters, San Bernardino Air Materiel Area, Norton Air Force Base, San Bernardino, Calif. Install Evaporative Coolers in 11 Base Buildings, Norton AF Base, San Bernardino, Calif. (IFB-04-607-56-455)—Job—\$44,998—AF 04(607)2149—Main Cornice Works, Inc., 2824 No. Main St., Los Angeles 31, Calif.

U. S. Navy Purchasing Office, Naval Supply Center, Norfolk 11, Va. Air Conditioning Equipment—1 lot—Neg. #354—\$42,510—Cox-Frank Corp., 5527 Virginia Beach Blvd., Norfolk, Va.

Headquarters, Mobile Air Materiel Area, Brookley Air Force Base, Alabama. Air conditioning and alterations, building 14A, section B, Brookley AFB, Ala. Project: MO-50-54. (Contract AF 01(601)19933)—Job—\$104,534—Peyton Higginson, 59 1/2 St. Francis St., Mobile, Ala.



## CLASSIFIED ADVERTISING

RATES for "Positions Wanted" \$7.50 per insertion. Limit 50 words. 15¢ per word over 50.

RATES for all other classifications \$10.00 per insertion. Limit 50 words. 20¢ per word over 50.

ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

## POSITIONS WANTED

**SALES REPRESENTATIVE** now available, 34 years old, (BSME), 2 years of engineering and 8 years successful experience in establishing and promoting distribution in: window units, residential, and package units. Proven sales record. Seeks opportunity with challenge. Located in Baltimore, Maryland. BOX A5574, Air Conditioning & Refrigeration News.

**AIR CONDITIONING**, refrigeration installation and service mechanic. Married, vet, 10 years of practical experience on residential, commercial and industrial equipment. Served and installed Brunner, Carrier, Westinghouse, York and etc. from 1/2 to 100 h.p. Seeks employment with progressive firm. Prefer Southern California or Southwest. BOX A 5575, Air Conditioning & Refrigeration News.

**AIR CONDITIONING** and heating engineer desires position with manufacturer or distributor. Has broad experience in residential and commercial air conditioning and refrigeration, hot water and steam heating, temperature control and sheet metal work. Now living in Midwest but willing to relocate for right opportunity. Write BOX A5590, Air Conditioning & Refrigeration News.

## POSITIONS AVAILABLE

**SALESMAN (EXPERIENCED)** wanted to sell Hussmann refrigerated display cases, shelving, check-out counters to supermarkets. Must make own layouts. Compensation open. Write fully to Joe Hauser, ELECTRIC PRODUCTS, INC., 5927 Baum Blvd., Pittsburgh 6, Pa.

**ENGINEER THOROUGHLY** experienced in commercial and industrial air conditioning and refrigeration to head engineering department of old established Philadelphia distributor and contractor. Degree required. Excellent salary plus profit sharing plan. Please give details of experience and references. Replies confidential. Contact Ralph Lambert, ELLIOTT-LEWIS CORPORATION, 16th & Hamilton Streets, Philadelphia, Pa.

**REFRIGERATION ENGINEER** mechanic wanted to service Frigidaire and Carrier ice cube making machinery. Good salary, permanent position, not seasonal, with fast-growing company planning national expansion. Work in sunny California with enjoyable living. Advancement possibilities. THE FAIR ICE CO., 424 S. Victory Blvd., Burbank, California.

**SALES ENGINEER:** Experienced in commercial air conditioning and industrial gas conversion equipment, sales and engineering. Excellent opportunity plus profit-sharing plan with one of Iowa's oldest and largest heating and air conditioning distributor contractors. Please give details of experience and references. Replies confidential. Phone or write — YOUNG HEATING COMPANY, Waterloo, Iowa.

**REFRIGERATION WHOLESALE** parts salesman wishing to relocate. Position now open in Southwest. Knowledge of heating and air conditioning controls an asset. Minimum of three years experience. Give all particulars in first letter. BOX A5572, Air Conditioning & Refrigeration News.

**FACTORY REPRESENTATIVE:** National manufacturer of all types environmental equipment, including low temperature, humidity and altitude chambers, has open territory in Texas, Oklahoma, Louisiana, Mississippi, Alabama, Georgia, Florida, Arkansas and Tennessee. Write giving all qualifications and other lines handled. BOX A5589, Air Conditioning & Refrigeration News.

## EQUIPMENT FOR SALE

**ARCTICAIRE** air conditioning equipment 2, 3 and 5 ton packaged water chillers, air or water cooled. Direct expansion air conditioning systems 2, 3 and 5 ton, air or water cooled, self contained and remote types. Write for literature and prices. ARCO, MANUFACTURERS AGENTS, INC., Merchandise Mart Bldg., 2201 Grand Avenue, Kansas City, Missouri.

**SERVICEMEN'S THERMOMETERS:** Mercury filled with pocket cases, range -60° to plus 160° F. Mfg. by Taylor and G. M. Price \$10.80 per dozen postpaid. H. L. BOGGESE & SONS, Liberty, Missouri, P. O. Box 137.

**MANUFACTURER LIQUIDATING** at 50% of cost complete residential 2 and 5-ton air conditioners also in original containers compressors, condensers, evaporators, coils, blowers and receivers for 2, 3 and 5-ton units. INDUSTRIES DEVELOPMENT CORPORATION, South Norwalk, Conn. Telephone: DAVIS 2-8248, Stamford, Conn.

**NEW SELF** contained Kesco automatic condensate water disposal pumps for air conditioners ice cube bins; at your local wholesaler; available in 10 and 20 foot heads.

**NEW YORK**, Abco Refrigeration, 1615 Second Ave.

**MT. VERNON**, Eastern Supply, 521 East Third Street

**SYRACUSE**, Gould-Farmer Co., 1020 W. Genesee Street

**WHITE PLAINS**, County Seat, 111 Central Ave.

**NEWARK, N. J.**, Tesco Distributors 78 Boston Street

**DAYTON, OHIO**, W. H. Kiefaber Co., Refrigeration Dept.

**SACRAMENTO, CALIF.**, Associated Refrigeration, 1717 Eye Street

**SEATTLE WASH.**, Refrigerative Supply, 204 W. Republican

**DETROIT 4, MICH.**, Lee Equipment Co., 4721 Joy Road

**HIGHLAND PARK, MICH.**, J. M. Ober, Inc., 55 Oakman Blvd.

**BRIDGEPORT, CONN.**, Parsons Bros., Inc., 2137 East Washington Ave.

Distributors write to KESCO PRODUCTS CORP., Springfield Gardens 13, N. Y. for sample pump and literature.

**BRAND-NEW 15-TON** shell & tube cleanable condensers 10" x 60", water conn. 1", gas line 1 1/2" flange valve, 1/2" liquid. Has by-pass conn. that can be manifolded for 30 tons. \$155.00 ea. 5 available. 3 h.p. air-cooled, 4-row condensers 22" x 32" x 4", 1/2" fins, conn. 1/2" tube x 1/2" tube manifold on each, \$47.50 ea. 1 h.p., 4 row condenser 16" x 18" x 4", 1/2" fin, conn. 1/2" tube, ea. \$15.50. 80 available. Cleanable 1 1/2" h.p. water-cooled condensers 1/2" water, 1/2" flare gas. mod. EL-150. 50 available. Each \$24.50. Will be shipped immediately from stock f.o.b. N.Y. R & R EQUIPMENT COMPANY, 2724 Third Ave., Bronx 54, N. Y.

## BUSINESS OPPORTUNITIES

**INVENTOR HAS "patented"** new type low side oil filter which filters oil before oil reaches pump, thereby preventing trouble in pump. Filter is easy to make, trouble free, easy to install. Inventor wants manufacturer to make and distribute. Please contact: EDWARD B. ANDERSON, 763 Edgewood Street, Baltimore 29, Maryland.

**FOR SALE:** Old, established commercial refrigeration, air conditioning and appliance sales and service on main street of town of 35,000 population Columbia Basin area. Long-time lease on building and dwelling. Will sell at inventory. Write BOX A5591, Air Conditioning & Refrigeration News.

**DALLAS, TEXAS—Air** conditioning contractor's business for sale. Everything goes. Organization of trained, proven and experienced sales engineers, office manager, bookkeeper, secretary, installation supt., service manager, servicemen, installation and sheet metal mechanics, etc. Equipment, stock, tools, trucks, over 100 contracts, goodwill, etc. A going business, established over ten years—Owner tired—Wants vacation and time to spend all the money he has made. Business worth much more than asking—Must have over \$100,000.00 cash before we talk. Doing large volume. Franchised dealer for best name air conditioning. Opportunity unequalled for right person with cash. Write BOX A5592, Air Conditioning & Refrigeration News.

## FRANCHISES WANTED

**A SALES** agency, New York City headquarters, specializing in refrigerated equipment. We cover the Eastern Seaboard, and are seeking another quality product to add to our line. We contact refrigeration dealers, dairies, ice cream companies and supermarket chains. Have complete sales and office staff, also showroom. Our organization is widely known in its field and holds memberships in the various trades we contact. Correspondence in strict confidence. Will visit your plant if your product interests us. BOX A 5585, Air Conditioning & Refrigeration News.

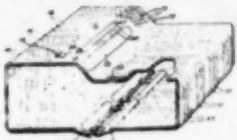
## MISCELLANEOUS

**ATTENTION SERVICEMEN:** Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: WALTER W. STARR; 2633 Lincoln Avenue, Chicago 13, Illinois.

## PATENTS

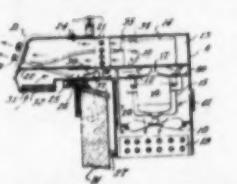
(Continued from preceding page)

**2,737,785. REFRIGERATOR EVAPO-RATOR.** Evans T. Morton, Galesburg, Ill., assignor to Admiral Corp., Chicago, Ill., a corporation of Delaware. Application Oct. 9, 1951, Serial No. 250,396. 10 Claims. (Cl. 62-126.)



1. An evaporator for a refrigerator comprising a series of refrigerant carrying tubes substantially enclosing a freezing compartment, the top of said compartment being of stepped formation, thereby providing a cold, drip free shelf for open trays on the lower step of the stepped formation, and accumulator means to collect and return any liquid refrigerant to said tubes connected to at least one of said tubes at its outlet, said accumulator means being formed at the rising part of said stepped formation.

**2,737,786. FREEZING ELEMENT FOR REFRIGERATION SYSTEMS.** Milton L. Lindenberg, Beloit, Wis. Application Dec. 26, 1951, Serial No. 263,323. 1 Claim. (Cl. 62-126.)



A freezing unit for a refrigeration system comprising a hollow generally tubular upstanding element providing a freezing chamber therein having a dome shaped closure provided in the upper end thereof, a manifold member connected at the bottom end thereof and having a spherical segment to form a circular cross-sectional shape of larger diameter than the freezing element and provided with spaced apart inlet and outlet openings, a continuous integral dividing partition having an enlarged lower generally circular segment interposed between said inlet and outlet openings to divide the manifold member into an inlet chamber and an outlet chamber and conforming to the circular cross-sectional shape of the manifold member to positively prevent upward shifting movement of said partition and extending upwardly therefrom within the hollow freezing element with the edges thereof in sealed relation to the inside wall of said freezing element to divide the same into an inlet passage and an outlet passage respectively communicating with said inlet and outlet manifold chambers, the upper end of said partition terminating in slightly spaced relation to the upper end of said freezing element, the inlet chamber of said manifold having only the inlet and the opening communicating with the inlet passage formed therein to cause circulation of all of the fluid supplied through the inlet conduit through the inlet and outlet passages of the freezing element, and conduit means connected with said inlet and outlet openings and being so disposed to direct the refrigeration fluid against the curved inside surface portions of said manifold to smoothly conduct the fluid into and out of the freezing chamber formed by said inlet and outlet passages, said curved dome shaped top closure of said hollow freezing element smoothly carrying the fluid from the inlet passage to the outlet passage to produce only a minimum of turbulence in said flowing fluid.

## Casey Hotel To Get 85 Conditioned Rooms

**SCRANTON, Pa.**—Included in the \$850,000 renovating plans for the 315-room Casey hotel here is \$90,000 to air condition 85 rooms, Eugene Casey, president and manager, announced recently.

## CHIEF REFRIGERATION ENGINEER

Unusual opportunity for a well grounded man who wants and can take responsibilities.

## SALARY OPEN

Location New York City—Our organization knows of this ad. Write in confidence to Box 1000, Realservice Advtg. Agency, 110 West 34 St., N.Y.C.

## 13 NEMA Firms Sell 1,306,337 Refrigerators In First 4 Mos.

Summary for April and First Four Months, 1956  
Complete Electric Household Refrigerators Only—Sales by Sizes—Units

Sizes	APRIL (13 Companies)			
	Domestic	Canadian	Foreign	Total
1. 3 cu. ft. (3.4 & under)...	1,421	2	868	1,423
2. 4 cu. ft. (3.5 to 4.4)....	868	1,111	1,643	2,582
3. 5 cu. ft. (4.5 to 5.4)....	4,499	400	14,814	19,713
4. 6 cu. ft. (5.5 to 6.4)....	52,974	1,497	1,945	55,416
5. 7 cu. ft. (6.5 to 7.4)....	13,490	2,342	3,682	19,514
6. 8 cu. ft. (7.5 to 8.4)....	60,218	1,045	2,973	64,236
7. 9 cu. ft. (8.5 to 9.4)....	49,733	1,047	2,923	53,683
8. 10 cu. ft. (9.5 to 10.4)...	72,986	656	1,933	75,575
9. 11 cu. ft. (10.5 to 11.4)...	41,018	8,098	28,715	77,831
10. 12 cu. ft. (11.5 to 12.4)...	297,297			297,297
11. 13 cu. ft. (12.5 & over)...				
12. Total .....	54,394	1,124	2,035	57,553

Refrigerators Having Two Exterior Doors (All Sizes Included In Above) .....

Sizes	FIRST FOUR MONTHS (13-13 Companies)			
	Domestic	Canadian	Foreign	Total
1. 3 cu. ft. (3.4 & under)...	3,707	26	3,733	3,733
2. 4 cu. ft. (3.5 to 4.4)....	3,059	8	3,067	3,067
3. 5 cu. ft. (4.5 to 5.4)....	27,188	2,967	4,248	34,398
4. 6 cu. ft. (5.5 to 6.4)....	191,054	3,744	42,261	237,059
5. 7 cu. ft. (6.5 to 7.4)....	57,453	4,874	4,683	67,010
6. 8 cu. ft. (7.5 to 8.4)....	219,046	8,079	16,353	243,478
7. 9 cu. ft. (8.5 to 9.4)....	227,816	4,015	11,426	243,257
8. 10 cu. ft. (9.5 to 10.4)...	287,842	3,556	8,796	300,194
9. 11 cu. ft. (10.5 to 11.4)...	166,908	2,173	5,080	174,161
10. 12 cu. ft. (11.5 to 12.4)...	1,184,073	29,408	92,856	1,306,337
11. 13 cu. ft. (12.5 & over)...	234,100	3,595	7,537	245,232
12. Total .....				

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12. Total .....				

Participating companies: Admiral Corp.; Crosley & Bendix Home Appliances Div.; Avco Mfg. Corp.; Frigidaire Div.; General Motors Corp.; General Electric Co.; Gibson Refrigerator Co.; Hotpoint Co., a Div. of General Electric Co.; Kelvinator Div.; American Motors Corp.; Maytag Co., The (In 4-1-56); Norge Div.; Borg-Warner Corp.; Philco Corp.; Appliance Div.; Servel, Inc.; Westinghouse Electric Corp.; Whirlpool-Seeger Corp.

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## NWAHACA Asks Crusade--

(Concluded from Page 1, Col. 5) the week before with this statement:

"Too many builders and heating contractors have tried to make a lousy buck with short-changed heat system designs, with the result that homeowners have paid far more for fuel than they should have, have not had comfortable homes, and have had to replace costly equipment years ahead of time."

The NWAHACA bulletin continued: "In this and subsequent remarks, Honett let the home builders know that he was not there to do any soft-soaping, even though some builders might be disposed to take their business elsewhere."

"A few minutes later in the course of his talk he displayed the courage of his convictions by pointing out over the assembly of building contractors and saying,

"I know of one popular home being sold here that has seven 4-in. runs to the first floor. It's a package job, all ready for an air conditioner, but it just won't cut the mustard."

### Short Ducts Cannot Carry Heat Fast Enough

Honett was further quoted as saying: "When this is the case, the ducts cannot carry away the heat fast enough—the furnace quickly heats up to the point where it is automatically shut off by a temperature control on the furnace bonnet. Then, it turns back on as soon as the bonnet temperature drops because the room thermostat still is demanding heat."

"The furnace cycles . . . every two or three minutes, shortening the life of the burner and heat exchanger and running fuel costs far higher than they should be."

The bulletin said Honett "emphasized that these troubles were not inherent in the 4-in. system, but were the result of a faulty, cost-cutting installation."

"He covered proper equipment sizing and the 'Flywheel effect'—went on down the line to discuss proper methods of insulation, orientation, and shading for air conditioned homes."

### Offers Formula for Finding Duct Requirements

"He offered some simple formulas for determining the minimum duct requirements for a given furnace size and the correct size for an extended plenum using 6-in. ducts."

"Intermittently, as he established these points, he cautioned the builders against considering anything less than these minimum requirements and referred them to specific sections of the

National Warm Air Heating & Air Conditioning Association manuals for verification."

Noting that the text of Honett's "educational" talk was fully reported in the *Milwaukee Journal* in the next Sunday edition, which was distributed to about 449,778 homes in the area, the bulletin stated:

"Many people bought that issue of the *Journal* intending to look at the new houses."

### News Story 'Arms' People with Information

"Their eyes caught the headlines over the text of Honett's talk. All that Honett had said, they read and were armed with information which would help protect their home buying dollars."

"That very afternoon, prospective home buyers were putting up stiff resistance to plush

model homes with peculiar heating and cooling systems."

The NWAHACA bulletin also pointed out that in one Michigan county, the heating systems in 300 to 400 project homes came under fire by Veterans Administration officials after complaints

Edwin B. Root, heating engineer and long-time manual committee member of the NWAHACA, together with fellow engineer A. B. Whitehead, was appointed by VA officials to make corrective recommendations.

"Acting upon these recommendations, the VA ordered that up to 16 corrections be made by the builder on each of the 400 installations," the bulletin noted.

### Firm Defends Self

In defense, according to the bulletin, the president of the construction company said that (1) heating facilities were installed in accordance with ap-

proved plans and specifications of the VA; (2) the township's inspection department gave final inspection and approval of the heating units; and (3) heating systems in these homes were no different from thousands of other (basementless) homes in the metropolitan Detroit area.

The bulletin said the VA's answer to this was: "Since the combined opinion (of the engineers) indicates that it is unlikely that a uniform temperature of 70° inside at 0° outside could be maintained under the present system of distribution, it cannot be considered as complying with VA minimum construction requirements and you (the construction company) are therefore directed to take corrective action as indicated."

In the editorial, the association said many industry leaders—"men and companies who live according to the dictates of a good conscience"—are "showing their strength and are rising like

cream to the top of the quart.

"It is easily possible even now to see that some elements of the warm air heating and air conditioning industry are showing themselves to be 'Creams,' and the others are showing themselves to be the thin dregs in the bottom of the bottle—'Blue Johns,' as they are known in many rural areas."

### G-E Motor Prices--

(Concluded from Page 1, Col. 5) being experienced, "which has caused similar moves in other motor lines."

Included in this increase are all direct-current fractional horsepower motor and generating equipment in NEMA 42, 56, and 66 frames and General Electric 70-frame. The two lines of alternating-current motors affected are the conventional above-ground gasoline pump motors and the small induction NEMA 42-frame motors.

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